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PRIMARY ATYPICAL PNEUMONIA, ETIOLOGY UNKNOWN

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Because of the wide prevalence and unusual clinical and radiological manifestations of atypical pneumonia considerable interest has been aroused in regard to its epidemiology and etiology and its relation to diseases of known etiology with a similar clinical picture.

Since 1935, at the University Infirmary, we have seen 350 cases among students and 50 in private practice. The observations on these 400 cases, occurring over a period of eight years, and the reports in the literature form the basis for this discussion of the clinical picture and the etiology of atypical pneumonia.

This acute infectious disease is a febrile illness of varying severity and duration, usually, but not uniformly, preceded and accompanied by symptoms referable to the respiratory tract. It is atypical in its clinical manifestations, x-ray picture and course, and is characterized by (1) a paucity of abnormal signs on physical examination; (2) very definite roentgenographic evidence of a pneumonic process in the lungs, which often makes for a marked disparity between x-ray findings and physical signs; (3) normal or only slightly increased leukocyte count; (4) absence of an etiological relationship with any known pathogenic bacteria; (5) failure to respond to any of the sulfonamide drugs; (6) relatively long incubation period; (7) infrequency of complications from invasion by secondary organisms; (8) low mortality rate but frequently a prolonged period of convalescence. This latter feature, together with the high and possibly increasing incidence and virulence of the disease, both in the civilian population and in the personnel of the armed forces, makes this one of the most important of the acute infectious diseases involving the respiratory tract at the present time.

On the whole, the essential clinical and roentgenographic features are similar, in spite of considerable variations reported in the severity and course of the disease in different localities and in different years.

Much confusion exists in regard to the designation of this type of infection. It has been reported under a variety of labels, depending upon whether an attempt was made to classify the cases according to clinical features, roentgenological findings, possible etiological factors, or all three.

Thus, cases have been described as "acute pneumonitis"[1], "acute influenza pneumon-

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itis"[2], "acute interstitial pneumonitis"[3], "bronchopneumonia of unknown etiology—variety X"[4], "pneumonitis"[5], "atypical pneumonia with leukopenia"[6], "current bronchopneumonia of unusual character and undetermined etiology"[7], "atypical bronchopneumonia of unknown etiology"[8], "virus pneumonia"[1f,9], "acute infection of the respiratory tract, type A—or type A virus pneumonia"[10], "primary atypical pneumonia"[11], "disseminated focal pneumonia"[12], "benign circumscribed pneumonia"[13], and "primary atypical pneumonia, etiology unknown"[14].

The latter designation has been suggested by the Director of the Commission on Pneumonia, Board for Investigation and Control of Influenza and Other Epidemic Diseases in the United States Army.

Perhaps the two most widely used terms to date are "pneumonitis", from the x-ray appearance of the pulmonary lesions, and "virus pneumonia." The latter term has been perhaps unfortunately rather loosely applied to these cases. While it is true that certain well recognized virus infections may cause pulmonary lesions and a clinical course similar to those observed in this disease, and while certain clinical and laboratory features observed in this group of infections suggest a virus etiology, it would seem wiser for purposes of future clarification and classification to restrict the use of the virus designation until one or more viruses can be definitely established as the causal agent or agents.

It is probable that atypical pneumonia of unknown etiology is not a distinct disease entity but, as Dingle and Finland[14d] and others have pointed out[9e,14c,15], is a clinical and radiological syndrome with multiple etiological agents. Nor do we believe it is a new disease or syndrome, as has been suggested by several observers and as the large number of recent reports might indicate. Certainly the essential clinical, roentgenological and pathological features of this type of infection have been observed prior to the reports of Bowen and Allen in 1935. Indeed, studies of lungs from patients dying in the Civil War show a pathological picture essentially similar to lesions described in fatal cases of atypical pneumonia in recent years[16]. There is clinical and radiological evidence that it was prevalent during the first World War, and, as today, was given various designations[17]. According to Cole[18], similar cases have been seen in New York over a period of thirty years. Dochez[18] has suggested the possibility that this infection might have been prevalent in the past, that its incidence might have diminished, and that it may have reappeared in recent years.

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Epidemiology

Atypical pneumonia of undetermined origin is apparently a widely prevalent infection, occurring in both sporadic and epidemic forms. It has been noted in almost all sections of the United States and Canada, in Hawaii[2], in England[5a,b,12,13] and in India[3b], and when reports are available, it will probably be shown to have occurred in military hospitals wherever our troops are now quartered. Because of the suggestive evidence that the infection frequently occurs in mild form without pulmonary involvement and because of the variable clinical criteria for differentiating this disease from influenza and other acute infections of the respiratory tract, it is impossible to estimate accurately the rate of attack among the population at large. One has the definite impression that, even allowing for the increased awareness of the profession in the diagnosis of atypical pneumonia, its incidence has actually increased in the last two years.

Age

While, judging from the large number of reports from colleges[1b,c,d,3a,8b,19] and military hospitals[1a,e,2,11a,14a,20,21], the incidence of the disease appears to be highest in young adults, it apparently attacks all age groups. It occurs in infants and children[22]. We have seen the disease in patients from the ages of 12 to 80. The increased opportunity for spread of the infection in schools and colleges, hospitals, and military posts undoubtedly plays an important part in the large number of cases occurring in those institutions, while the easy accessibility of the x-ray and fluoroscope and their more routine use have undoubtedly aided in its more widespread recognition in these places.

Season

The disease is not limited to any one season of the year, although in the majority of the reports cases have been more prevalent in the late fall and winter months[1c,3a,7,8,10,19c,23]. On the other hand, small outbreaks as well as sporadic cases have been reported in the spring and summer months[4,9b,20,21a,b,24]. We have seen cases in every month of the year, and in each of the past twenty-four months we have had at least one case in the University Infirmary. We have noted over an eight-year period that from year to year the monthly incidence varies, but in general it is highest in the period from October through March.

There has been no constant relationship between the occurrence of atypical pneumonia and that of influenza, or other acute infections of the respiratory tract. Twice during the period from 1935 to 1943 there have been outbreaks of influenza—in the winter of 1936 and again in 1941. In neither year did we observe an increase in the number of cases of atypical pneumonia before, during, or following the outbreak of influenza. This finding suggests, as do the etiological studies of others[8,20,25], that the virus of influenza, types A and B, is not the causative agent of atypical pneumonia.

The relation of this infection to other acute diseases of the respiratory tract is not so clear. In the outbreak of atypical pneumonia at Camp Claiborne, Louisiana, in the summer of 1942, Dingle and his co-workers[20] reported a rough parallelism between the incidence of atypical pneumonia and that of other acute diseases of the respiratory tract. Similarly, other observers have noted

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a possible relationship[1b,c,10,25a]. As has been noted above, the majority of reports would indicate a higher incidence of the disease in the fall and winter months, when the acute respiratory infections are most prevalent, and this has been true in our experience. On the other hand, we have not observed a constantly recurring correlation between the number of other respiratory diseases and the incidence of atypical pneumonia. Thus, from September, 1942, to May, 1943, there have been 125 cases of this type of pneumonia; yet the incidence of respiratory infections has been less than in the same period of 1941-1942, when there occurred only 21 cases of atypical pneumonia.

It may well be that many of the cases of so-called acute respiratory infections with symptoms indistinguishable from those of this disease are milder forms of this infection without pulmonary lesions. The final answer to the relation of this acute infectious disease to other infections of the respiratory tract must await further etiological and epidemiological studies.

Communicability

That the disease is communicable is now fairly definitely established, although evidence regarding the mode of spread is lacking. Opinions differ in regard to the degree of communicability of the infectious agent, but in general it is apparently not highly contagious.

There have been reports of several cases occurring in one family[1c,3a,10,19c], and in other instances cases have been traced to a single known contact[4,7,18,20,22c,23]. Some observers have noted a high rate of attack among doctors, nurses, and other hospital personnel in intimate or prolonged contact with the disease, but this has not been common in our experience.

The disease is presumably spread through direct contact from person to person. The mild unidentified cases may be of considerable importance in the spread of the infection.

The Incubation Period:

The available evidence in regard to the period of incubation indicates that it is variable, but in general ranges from one to three weeks or longer. In at least one outbreak it appeared to be shorter[23]. In our own experience, where it has been possible to trace contacts accurately the incubation period has varied from ten to eighteen days.

The Clinical Picture

The Onset:

The onset is most frequently insidious, but occasionally it may be abrupt. For one to six days or longer the patients may have symptoms of a mild respiratory infection, with nasal discharge, headache, mild general malaise, non-productive cough and occasionally sore throat, loss of appetite and vague gastro-intestinal symptoms, although these latter three complaints are not usually prominent. Like the clinical course, the onset may vary both among sporadic cases and in different outbreaks. In some epidemics respiratory symptoms preceding or accompanying the disease have been rare or non-existent.

Symptoms:

General malaise, fever, headache, often frontal and peri-orbital, cough and chilliness are prominent features. The headache and general malaise vary in intensity, frequently persist throughout the febrile period, and show exacerbation with each spread of the pulmonary lesions.

The temperature ranges from 99 F. to 105 F. In the milder cases it is likely to be between 100 and 103 F., while in the more severe cases, higher levels are the rule. The duration of the fever is variable and, while it may persist for six to eight weeks or longer, the average duration is five to ten days, ending by lysis. The temperature may be sustained throughout the febrile period, but more commonly it is of the septic or swinging type and is often biphasic[4,14d]. In the more severe cases one sees several temperature elevations of 104 to 105 F. in a twenty-four hour period, each preceded by chilliness and followed by drenching sweats. In a few of our cases extensive pulmonary lesions have been demonstrated by x-ray in patients whose temperature was never above 100 F.

In many cases cough is a prominent symptom; it is frequently severe and occurs in distressing paroxysms difficult to control. In the first two to four days it is largely non-productive, but later mucoid and muco-purulent sputum may be raised. While occasionally blood streaked, the sputum almost never has the "prune juice" appearance and other characteristics of typical lobar pneumonia.

In some cases there is little or no cough throughout the course of the disease, and it may be impossible to secure a specimen of sputum. This has been true in about 10 per cent of our cases.

Chilliness is frequent, but true shaking rigors are rarely seen. Substernal soreness and tightness in the chest are frequent complaints, but the pain of acute fibrinous pleurisy is uncommon. Profuse sweating early in the disease, at times persisting into convalescence, is often seen and may be quite distressing.

In the mild and moderately severe cases the pulse rate is often slow in relation to the elevation of the temperature. In the more severely ill patients the pulse is more often accelerated. The respiratory rate is, for the most part, normal, or only moderately elevated. Dyspnea and asthmatic breathing are rarely seen[7].

Prostration may be marked and out of all proportion to the physical findings or to the amount of lung involvement, as demonstrated by x-ray. For the most part, however, the majority of patients do not appear clinically to be as sick as one would expect from the height of the temperature and the extensiveness of the pulmonary lesions.

In the more severely ill patients, cyanosis and abdominal distention are not uncommon. Severe, persistent headache, meningismus, slight jaundice, mental confusion and coma have all been encountered, but are relatively rare.

Physical Signs:

One of the characteristics of the disease is the scarcity of abnormal physical findings, particularly on examination of the lungs, throughout the entire course of the disease.

At the onset, aside from a mildly congested nasal mucous membrane and a slightly injected pharynx, one may find no abnormal signs. However, in most cases, within the first two to four days after the onset of the more severe symptoms one can hear a few crepitant or crackling rales—chiefly inspiratory—over the pneumonic area, often accompanied by slight impairment of the percussion note and slight to moderate suppression of the intensity of voice and breath sounds. Except for an increase in the number of rales and a change in their character to a louder, more moist, or "sticky" type, and the appearance of coarse rhonchi throughout the area involved, the lungs may show no further progression toward the typical signs of pulmonary consolidation. Such signs are rarely encountered.

We have seen cases in which examination of the lungs showed no abnormal signs— in spite of an extensive pneumonic process demonstrated by x-ray—until defervescence occurred, when showers of coarse, moist rales alone or accompanied by changes in the character of breath sounds and percussion note appeared. In a few cases the pulmonary signs may be fleeting and may disappear after a few days, or they may persist for weeks or months, even after the disappearance of x-ray evidence of the pneumonia.

In cases that run a longer course with recrudescences and x-ray evidence of spread or extension of the pneumonia into one or more lobes the above signs may be found over scattered areas, or over the entire chest.

In general, the physical signs over the lungs are more those of a slight infiltrative process or of an atelectasis, or both, than those of consolidation, and the appearance of rales some time in the course of the disease is probably the most characteristic abnormal sign. In some cases a palpable spleen[7] has been noted, but this has occurred rarely in our experience and in that of the majority of observers.

It is important to emphasize that the height of the temperature, the physical signs in the lungs and the extensiveness of the pneumonia, as demonstrated by the x-ray picture, are not reliable criteria for assessing the seriousness of the patient's illness. One's clinical impression of the appearance of the patient is more reliable. Thus, in some cases there may be a high temperature and marked prostration, with as definite signs in the lungs as one usually finds in this disease, and yet the x-ray may show only slight to moderate involvement. In other cases there may be extensive lung involvement demonstrable by x-ray, with minimal or no abnormal physical signs over the lungs, and the patient may appear clinically quite ill. On the other hand, one is impressed by the number of patients with high temperature, with or without definite abnormal signs in the lungs, but with extensive x-ray findings, who do not appear particularly uncomfortable or very sick. This lack of correlation between the clinical appearance of the patients and the temperature and x-ray

findings is one of the most characteristic and constant features of the disease.

The Course of the Disease:

For the most part the disease is mild, but it may run a severe, at times alarming, and rarely a fatal course. In the milder and moderately severe cases the physical signs usually disappear completely in one to three weeks. In the more severe cases the course differs only in degree and duration from that in the milder ones. Subjective symptoms and prostration are more marked, and the more serious symptoms and signs mentioned above are occasionally encountered. The temperature is higher, persists for a longer time, and is more likely to be of the swinging or septic type. Relapses and recrudescences are not infrequent and occasionally the pneumonic process involves successively all five lobes over a period of from three to six weeks, or longer. In these severe cases convalescence may be prolonged for one to three months or more, with symptoms similar to those following severe influenza.

Laboratory Findings

Generally the leukocyte count is normal or only slightly increased in the early stages of the disease, but this finding varies in different outbreaks and in sporadic cases. Either leukopenia or leukocytosis may occur at the onset. Counts as high as 65,000 have been reported[7,18]. There has been no significant variation from normal in the distribution of the leukocytes except for the increase in polymorphonuclear cells in those patients with a leukocytosis.

Frequently when resolution of the pneumonic process begins the leukocyte count becomes moderately elevated, and may remain so for several weeks. In cases with a prolonged course a secondary anemia occasionally develops. The sedimentation rates are increased. Urinary findings are those that commonly occur in febrile diseases. False positive Wassermann reactions have been reported during the acute stage of the infection[7,26].

Roentgen Ray Examination

The x-ray findings, while not pathognomonic of this disease, are, in conjunction with the clinical picture, of the greatest importance in establishing the diagnosis and are fairly typical in spite of their variability. Not infrequently the first evidence of a pneumonic process is discovered by x-ray examination, which generally shows more extensive involvement than would be expected from physical signs. If more frequent use were made of this diagnostic procedure in obscure respiratory infections, undoubtedly the incidence of atypical pneumonia would be found to be much higher than even the increasing number of reports would indicate.

There have been many excellent descriptions of the radiological picture in these cases given by Bowen[2], Kneeland[7], Longcope[4], Green and Eldridge[14a], Goodrich and Bradford[9e], Dingle and Finland[14d], Seeds and Mazer[9f], Kornblum and Reimann[27] and others.

Briefly, in the majority of cases the pulmonary lesions can be shown by x-ray to begin as an increase in the hilar shadow and as an accentuation and fuzziness of the bronchial markings, especially in one or both lower lobes. This area often develops into a soft mottled or homogeneous density in the shape of a fan or wedge or rounded shadow extending toward the periphery of the lung —more commonly toward the diaphragm or mid-portion of the lower lobe, less frequently toward the apex. The lower lobes have been much more frequently involved than the upper in all reports.

The shadow gradually fades out into normal lung tissues. Generally it involves only a portion of a lobe, but as the disease progresses actual mottled shadows indicating parenchymal spread may develop and coalesce. Seldom does this infiltrative type of lesion produce as dense a shadow as is seen in lobar pneumonia[2] and, as has been pointed out by Green and Eldridge[14a], it rarely completely obscures the normal vascular and bony shadows in the chest. Seeds and Mazer[9f] describe this as a "striated infiltrative background rather than a pure homogenicity."

Not infrequently the lesions may become bilateral and may spread from lobe to lobe, demonstrated roentgenographically as areas of moderate patchy density. Often small areas of involvement occur in one or the other cardiophrenic angle. In other cases the lesions may appear as small areas of the

26. Stahle, D. C.: Clinical Report on Primary Atypical Pneumonia, Report at Regional Meeting Am. Coll. Physicians, Walter Reed Hospital, April 24, 1943.

27. Kornblum, K. and Reimann, H. A.: The Roentgenological Aspects of an Epidemic of Acute Respiratory Tract Infection, Am. J. Roentgenol. 44:838-844 (Sept.) 1940.

soft "cotton wool" type of acute exudative infiltration that occurs in tuberculosis.

The duration of the x-ray findings is variable: often the shadows are fleeting, disappearing in a few days, while in other cases x-ray evidence of infiltration may persist for as long as three months[9e]. In the majority of cases the x-ray findings disappear completely in one to three weeks. Occasionally the increased hilar and bronchial markings are visible for a month or longer.

Pathology

The few cases of atypical pneumonia that have come to autopsy show a fairly uniform pathological picture in the lungs, which histologically is characterized by a hemorrhagic interstitial type of pneumonia of patchy distribution with involvement of the bronchi and bronchioles. The exudate in the involved areas is chiefly of the mononuclear cells. The histological findings are probably not any more pathognomonic for this disease than is the x-ray picture. Similar pathological lesions have been observed in influenzal pneumonia, psittacosis, ornithosis[14d,15,16], "Q" fever[16], and in the pneumonia following measles[16]. This is suggestive evidence of a virus etiology, but, as has been pointed out by Golden[16], it does not necessarily follow that similar pathological lesions result from similar pathogenic agents.

Complications

As a general rule complications are rare. Otitis media, purulent but more often catarrhal, has been noted and has been particularly common in our experience. Acute fibrinous pleuritis, empyema, tonsillitis, acute sinusitis, polyarthritis, pneumococcal pneumonia, liver damage, thrombophlebitis, involvement of the central nervous system, and encephalitis have been observed but are certainly rare.

Differential Diagnosis

If one is aware of the prevalence of atypical pneumonia the diagnosis can be made on the basis of the clinical picture. The usual laboratory procedures, especially the x-ray examination, provide important confirmatory evidence for the clinical diagnosis. Unfortunately, as so often happens among less discriminating physicians, the diagnosis will undoubtedly become quite popular as a label for many unexplained fevers and atypical manifestations of other diseases. If we are to make progress in the eventual solution of this confused problem we must make the diagnosis only on sufficient clinical and laboratory evidence, including x-ray or fluoroscopic findings in the lungs.

Within the first few days the disease may suggest typhoid fever, undulant fever, tularemia, and any blood stream infection. With the development of pulmonary lesions the disease may at times be confused with influenzal pneumonia, pneumococcus pneumonia, atelectasis, malignancy of the lung, fungus infections, and especially pulmonary tuberculosis if lesions are in the upper lobe. In these cases serial roentgenograms of the chest over a week or ten days, the absence of positive sputum, and the clinical improvement should prevent the institution of pneumothorax, such as has been reported[9e]. Wherever laboratory facilities are available, attempts should be made to exclude the known virus agents that may produce a similar picture.

Immunity

Reliable data are not available in regard to the immunity from this infection. During the period since 1935 we have seen only 9 patients who had more than one attack. In 7 of the cases the second attack occurred within two to four months after the first, and because of the known variability in the duration of the disease, the frequency of recurrences and relapses, and the lack of knowledge in regard to the causal agent or agents involved, it is impossible to say whether this represents a second attack of the disease or a recrudescence of the original infection. In 2 patients second attacks occurred two years following the initial illness.

Etiology

The etiology of atypical bronchopneumonia is still undetermined. Since a clinical radiological syndrome very similar to this may be produced by a number of known agents[14d, 15,28], the confusion in regard to the diagnosis and proper classification of this entire group of infections cannot be clarified until the various etiological factors involved can be identified; only then will it be possible to

28. (a) Favour, C. B.: Ornithosis (Psittacosis); A Report of Three Cases and a Historical, Clinical and Laboratory Comparison With Human Atypical (Virus) Pneumonia, Am. J. M. Sc. 205:162-187 (Feb.) 1943.
(b) Hornibrook, J. W. and Nelson, K. R.: An Institutional Outbreak of Pneumonitis; Epidemiological and Clinical Studies, Pub. Health Rep. 55:1936-1944 (Oct. 25) 1940.

separate from this large and, for the most part, unclassified group those cases that result from infection by a specific agent.

The usual bacteriological diagnostic studies have been as disappointing as has the physical examination of the lungs. Repeated blood cultures have been uniformly sterile. Agglutinations for the bacilli of the typhoid group of organisms, tularemia, brucellosis, and Proteus X19 have been negative.

Bacteriological studies of the nose and throat and of the sputum show essentially the normal flora for the respiratory tract. The incidence of pneumococci found apparently varies with the year and the locality. The pneumococci which have been isolated have been often of the "higher" types and are not thought to have any etiological relationship to the infection. Evidence of tuberculosis and fungus infections has not been found in the sputum. In a number of the cases that we have observed in the last twelve months the sputum, even though mucopurulent in appearance, has shown a scarcity of organisms throughout the entire course of the disease.

Because of the clinical, radiological, and pathological resemblance of atypical pneumonia of unknown etiology to similar manifestations produced by the viruses of influenza[15], psittacosis and ornithosis[15,28a,29], most observers, since the disease was first recognized, have felt that it was caused by a virus. Repeated attempts[22a,d,30] have been made to isolate a virus or rickettsial agent from patients with this disease. Thus far in most of the epidemics and groups of sporadic cases in which such studies have been reported, it has not been possible to relate any of these agents to atypical pneumonia, in spite of the inoculation into a variety of laboratory animals, including mice, ferrets, guinea pigs, rabbits, and various types of monkeys, and into the chorio-allantoic membrane of hen's eggs, of naso-pharyngeal washings, sputum and blood from patients with this disease.

In spite of these negative results, there are data which suggest that one or more viruses may be responsible for atypical pneumonia. Thus, filtrable agents which produced pneumonia in a variety of animals, including mice, mongooses, and cotton rats, have been isolated from specimens of sputum, nasopharyngeal washings, or blood from patients with this disease by Stokes et al.[25b], Francis and Magill[25c,31], Weir and Horsfall[32], Eaton and his co-workers[33], Johnson[20], and Horsfall and others[34]. Baker[35], and Blake, Howard, and Tatlock[36] report the isolation of a virus—"the cat pneumonitis virus"—from cats ill with a severe respiratory infection and pneumonia, and were able to reproduce a similar infection in other cats. There is suggestive evidence in their reports both that a similar infection with atypical pneumonia in human patients may have resulted from contact with the cat virus, and, on the other hand, that cats may have acquired the infection from human beings.

The possible relation of atypical pneumonia of unknown etiology to psittacosis or ornithosis (a term suggested by Meyer[37] to include psittacosis-like infections in non-psittacine birds and in human beings) has been the subject of considerable interest and investigation. Thus, Eaton, Beck and Pearson[38], Meyer and his co-workers[37,39], and Stickney and Heilman[29] have reported the isolation of psittacosis-like viruses from patients with atypical pneumonia occurring both in small outbreaks and sporadically, who had been in contact with pigeons, chickens, and other barnyard fowls. This psittacosis group of viruses has been shown to be related to the meningo-pneumonitis virus of Francis and Magill and to the virus of lymphogranuloma venereum[38].

Favour[28a] and Smadel[40] have reported a

29. Stickney, J. M. and Heilman, F. R.: The Isolation of a Virus in Atypical Pneumonia, Proc. Staff Meet., Mayo Clin. 17:369-375 (June 17) 1942.
30. (a) Enders, J. F., Sullivan, E. R., Hammon, W. D. and Meakins, J. L., cited by Murray (8).
(b) Brown, T. M., cited by Longcope (4).
(c) Dyer, R. E. and Topping, N. H., cited by Daniels (19c).
31. Francis, T., Jr. and Magill, T. P., cited by Reimann (10).
32. Weir, J. M. and Horsfall, F. L., Jr.: The Recovery From Patients With Acute Pneumonitis of a Virus Causing Pneumonia in the Mongoose, J. Exper. Med. 72:595-610 (Nov.) 1940.
33. Eaton, M. D., Meiklejohn, G., Van Herick, W. and Talbot, J. C.: An Infectious Agent From Cases of Atypical Pneumonia Apparently Transmissible to Cotton Rats, Science 96:518-519 (Dec. 4) 1942.
34. Horsfall, F. L., Jr., Curnen, E. C., Mirick, G. S., Thomas, L. and Ziegler, J. E., Jr.: A Virus Recovered From Patients With Primary Atypical Pneumonia, Science 97:289-291 (March 26) 1943.
35. Baker, J. A.: A Virus Obtained From a Pneumonia of Cats and Its Possible Relation to the Cause of Atypical Pneumonia in Man, Science 96:475-476 (Nov. 20) 1942.
36. Blake, F. G., Howard, M. E. and Tatlock, H.: Feline Virus Pneumonia and Its Possible Relation to Some Cases of Primary Atypical Pneumonia in Man, Yale J. Biol. & Med. 15:139-166 (Dec.) 1942.
37. Meyer, K. F., Eddie, B. and Yanamura, H. Y.: Ornithosis (Psittacosis) in Pigeons and Its Relation to Human Pneumonitis, Proc. Soc. Exper. Biol. & Med. 49:609-615 (April) 1942.
38. Eaton, M. D., Beck, M. D. and Pearson, H. E.: A Virus From Cases of Atypical Pneumonia, Relation to the Viruses of Meningopneumonitis and Psittacosis, J. Exper. Med. 73:641-654 (May) 1941.
39. Meyer, K. F. and Eddie, B.: Spontaneous Ornithosis (Psittacosis) in Chickens the Cause of a Human Infection, Proc. Soc. Exper. Biol. & Med. 49:522-525 (April) 1942.
40. Smadel, J. E.: Atypical Pneumonia and Psittacosis, J. Clin. Investigation 22:57-65 (Jan.) 1943.

high titer of complement-fixing antibodies for the psittacosis virus in the sera of patients with atypical pneumonia occurring sporadically in Boston, New York, and other Eastern cities. The former has pointed out the striking similarities between the clinical picture, x-ray, laboratory, and pathological findings in psittacosis and in atypical pneumonia of undetermined etiology. Dingle et al.[20], from serological studies carried out on cases of atypical pneumonia at Camp Claiborne, conclude that viruses of this group could largely be excluded as causal agents in that epidemic. They further suggest that the isolation of one of the viruses of the psittacosis group from patients with atypical pneumonia may be only suggestive evidence of its etiological relationship to the infection, because of the very wide distribution of strains of this virus in birds and animals.

In 1940 Hornibrook and Nelson[28b] reported an outbreak of atypical pneumonia among employees at the National Institute of Health, from three of whom Dyer, Topping and Bengtson[41] isolated a rickettsial organism which they demonstrated to be identical with that previously isolated from cases of Australian "Q" fever.

Obviously, much work must be done before the confusion regarding the etiology of atypical pneumonia can be clarified. The few successful attempts to isolate filtrable agents from patients with this disease provide suggestive but not conclusive evidence in support of the virus etiology of the infection. While viruses of the psittacosis group[28a,37,38,39,40,42], and certain rickettsial agents[41] may all play a part as causative factors in some of the cases currently diagnosed as atypical pneumonia, it seems more likely that one or more as yet unidentified filtrable agents will be found to be responsible for this infection. Because of the possible widespread distribution of different groups of viruses and rickettsial agents in birds, insects, and animals, it is important from both the etiological and epidemiological standpoints, that in the future cases of atypical pneumonia be studied with particular reference to contact with such possible sources of infection.

41. Dyer, R. E., Topping, N. H. and Bengtson, I. A.: An Institutional Outbreak of Pneumonitis; Isolation and Identification of Causative Agents, Pub. Health Rep. 55:1945-1954 (Oct. 25) 1940.
42. Eddie, B. and Francis, T., Jr.: Occurrence of Psittacosis-Like Infection in Domestic and Game Birds of Michigan, Proc. Soc. Exper. Biol. & Med. 50:291-295 (June) 1942.

Treatment

Therapy in atypical pneumonia at present is symptomatic, supportive, and non-specific. The sulfonamide drugs have produced no effect on the course of this disease, and as soon as the diagnosis is established there is probably no indication for their use, except in the rare instance of a complication from secondary invasion by one of the common pathogenic bacteria.

Rarely in the severe cases with cyanosis and dyspnea oxygen therapy is indicated and may be life-saving. Blood transfusions have been used, particularly plasma and whole blood from convalescents[7,9d]. There is certainly theoretical justification for this procedure, but it has been tried too seldom thus far for the proper evaluation of its efficacy.

Isolation of the patient as soon as the diagnosis is suspected is the only preventive measure now available.

Summary

The clinical picture, course, and laboratory findings in primary atypical pneumonia of unknown etiology have been described. Observations on a series of 400 cases are similar to those previously reported. The epidemiology and possible etiology have been discussed, and it is suggested on the basis of available evidence that the disease probably results from infection by one or more filtrable viruses not yet identified.

Abstract of Discussion

Captain W. H. Roper (Fort Bragg): Dr. Berryhill pointed out the scarcity of abnormal physical findings in atypical pneumonia. I do not believe that I would belittle the physical signs quite as much as he seems to. It is true that the physical signs are scarce, but almost invariably at times in the course of the disease, and particularly by the end of the first week, physical signs are present. Physical signs may be, at the outset, distant breath sounds, fluctuation in percussion, dullness to percussion, and "sticky" rales at the end of very deep inspiration.

The disparity between the physical findings, the x-ray findings, and the severity of the disease is outstanding in atypical pneumonia. The x-ray findings may be marked, the physical signs light, and the clinical course mild; or any other combination may be found. The diagnosis may well be made, as it often has been, without x-ray, as Dr. Berryhill mentioned.

The very low degree of communicability of atypical pneumonia is evidenced by the fact that it usually occurs not as an epidemic but sporadically, the cases being spread out among the populace, and by the infrequent occurrence of this disease among the large number of people who are attending patients with the disease.

The neurocirculatory instability of the patient, particularly in the convalescent phase, is extremely important, as Dr. Berryhill has brought out.

Secondary endobronchial invasion sometimes occurs, and it is very important to be able to differentiate between that and other conditions. If the white blood cell count is elevated above 12,000 to 15,000, or if the patient shows other evidence of secondary invasion, then the use of a sulfonamide is very probably justified.

Personally, I feel rather strongly, as do a number of other people, and as Dr. Berryhill has inferred, that atypical pneumonia may be a systemic disease with or without pulmonary involvement.

Dr. J. M. Mewborn (Farmville): I feel that atypical pneumonia is rather more contagious than either of the preceding discussions would indicate. When I have a case in a family most of the members of that family eventually have it. I find, too, that neighbors who visit them usually come down with it, and I think that it is probably contagious through close association.

In my experience mild diarrhea is frequently associated with atypical pneumonia, and in a fairly large percentage of the cases the patient has a severely toxic appearance.

I cannot help but wonder if this is not the same type of infection we saw during the last great war, and if the wide use of sulfonamide drugs has not kept down the secondary pneumonia and materially lowered the death rate. Most of us out in the field use the sulfonamides in these cases, and we are deeply impressed by the lack of most of the complications which we would reasonably expect to follow such a severe systemic disease. In at least 8 or 10 of these cases during the last three months I have made fluoroscopic examinations and have found small amounts of fluid in the chest; in all of these cases it disappeared without drainage, and in no case did empyema develop. I attribute that to the wide use of the sulfonamides.

Dr. Chauncey Royster (Fort Bragg): In the very large number of cases of atypical pneumonia which we have had at Fort Bragg, we have had 3 deaths. One of those happened to be a case in which there was little or no secondary complication, the patient only being sick about five days. The appearance of the lungs at the time of autopsy perhaps explains the wide variety of the physical signs. At autopsy there were seen lesions which ranged all the way from a pure bronchitis with perhaps nothing in the alveoli to a very purulent bronchitis, with the process extending into the interstitial area of the lungs so that there was marked debris at the bottom of the bronchi and the alveoli.

I should like to take issue with those gentlemen who have said, or indicated, that sulfonamides do no harm. In my experience the patients not only are not benefited by the sulfonamides, but many of them are made worse by them. Their use seems to prolong the disease or make the patient worse. We do give sulfonamides in cases with an elevated white count, but whether these are true cases of atypical pneumonia or not, it is hard to say. In such cases the patients do respond rather dramatically to sulfonamides, but in the usual type of atypical pneumonia the patient does not so respond.

Dr. B. E. Rhudy (Greensboro): Something has been said here with reference to cases that occurred during the last war. I had an opportunity of seeing many cases of flu during that period, and, of course, since that time. As to whether the etiological factor is the same in atypical pneumonia and in the old "flu-pneumonia" I am not in position to say, but I do feel that the distribution of the shadow markings of the lungs is entirely different from that which we saw during the last war.

Dr. Wingate M. Johnson (Winston-Salem): I agree with Dr. Rhudy in what he just said about the difference between this pneumonia and the 1918 variety. I think that they are entirely different infections.

Dr. F. R. Taylor (High Point): I believe that there are a group of diseases, caused by closely related viruses and clinically indistinguishable. Until we are in position to do a lot of exhaustive and expensive research and ferret out the causative agents we cannot be sure that we are dealing with the same entity.

Dr. J. B. Bullitt (Chapel Hill): The clinical picture of atypical pneumonia is, to my mind, quite different from the cases of "flu-pneumonia" seen during the last war. We seem to be dealing with quite a number of somewhat different diseases and different conditions from those found during the 'flu epidemic that we had twenty-five years ago; and the cases seen then were probably not all the same entity.

Dr. Berryhill: I want to thank you gentlemen for your discussion, which shows that you have great interest in this very important disease.

I didn't mean to leave the impression that there are no physical signs in atypical pneumonia. The point I would like to leave with you is that you must not expect to find a bronchial breathing and fullness that will knock you down, such as you find in lobar pneumonia.

Dr. Mewborn has raised a very interesting question in his remarks. One may gather the impression from contacts here and there that the disease may be fairly contagious, but I think that, on the whole, as compared with measles, for example, or with 'flu epidemics, the disease is certainly of a low communicability.

There are gastro-intestinal symptoms in many patients, but I think they are, by and large, a minor part of the clinical picture.

Aerial transmission of the influenza virus.—It was not until 1937 that a group of Russian workers headed by Smorodintseff succeeded in producing influenza in human volunteers by allowing them to inhale influenza virus dispersed in fine droplets in the air. Since then aerial transmission of influenza in ferrets has been accomplished. More recently, Smorodintseff, Wells and Henle and our laboratory have been able to produce experimental influenza in mice by the air-borne route. The virus employed, having been passed through several hundred mice following its isolation from a human case, was atomized as a very fine mist into a chamber containing the mice to be infected. We found that an exposure of only 15 seconds to an amount of virus diluted 300,000 times in the chamber air sufficed to produce pneumonic lesions in all the mice. A two-minute exposure resulted in death of all the animals. Even with amounts of virus corresponding to a dilution in the air of one to thirty million, all the mice acquired pulmonary lesions. That influenza virus may remain suspended in air in a viable and infective state for relatively long periods of time was demonstrated by introducing mice into virus-containing atmospheres as long as three hours subsequent to atomization of the virus. All mice became infected. — Robertson, O. H.: Air-Borne Infection, Science 97:497 (June 4) 1943.

LOCAL USE OF SULFADIAZINE, TYROTHRICIN, PENICILLIN AND RADON IN OTOLARYNGOLOGY

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This report is intended merely as a preliminary survey of otolaryngologic therapy utilizing the chemotherapeutic agent sulfadiazine, the bactericidal and bacteriostatic agents tyrothricin and penicillin, and the radioactive agent radon. Further specific evaluations will be forthcoming at the completion of studies extending over the past two years.

Sulfadiazine Solution

Sulfadiazine solution, first developed by Pickrell[1] for the local treatment of burns, is 2.5 per cent sulfadiazine in 8 per cent triethanolamine. The solution has a *p*H of 8.7, is non-toxic, and is readily absorbed by tissues. Local use makes unnecessary the saturation of the entire body and thus prevents various toxic reactions associated with the sulfonamides.

This solution is invaluable in the treatment of the common cold and infections of the pharynx and nasopharynx, particularly when they are due to beta hemolytic streptococci. Controlled studies for the past two winters on student nurses with acute coryza indicate that the disagreeable symptoms and complications, such as sinusitis and otitis, associated with this disease are due not to the virus, but to secondary bacterial invaders of the mucous membranes. Best results are obtained by instituting early treatment. The nasal passages and pharynx should be sprayed frequently and with a sufficient amount of the solution (10-15 cc. daily) so that by absorption the concentration in the mucous membranes of the nose, nasopharynx and pharynx will become high enough to prevent growth of pyogenic organisms. The nose and pharynx should be sprayed thoroughly every hour, when the patient is awake, the first day, and every two hours from the second to the fifth day. Local shrinking agents should also be used when necessary. Metal parts of the atomizer must not be allowed to remain in contact with the solution overnight, as a corrosive action will take place. If properly used, this form of local treatment reduces the duration of coryza, lessens the disagreeable symptoms, and prevents complications such as otitis and sinusitis.

Tyrothricin

Bactericidal agents derived from microorganisms open up a new and fascinating field of therapy. In 1939 Rene Dubos[2] found that a specific bactericidal agent could be obtained from the aerobic sporulating soil bacterium, Bacillus brevis. By using peptone cultures of this organism, a water soluble and a water insoluble fraction have been obtained. The water soluble fraction is not bactericidal, whereas the water insoluble fraction is highly bactericidal. This bactericidal crystalline material is called tyrothricin. It has been further fractionated into gramicidin and tyrocidine, both of which appear to be polypeptides. Gramicidin is bactericidal in general for gram-positive organisms, while tyrocidine is bactericidal for both gram-positive and gram-negative organisms. The action of gramicidin, however, is believed to be due to interference with one or more metabolic systems of the individual bacterium. Specifically, it may act on the cephalin phospholipid metabolism, inasmuch as cultures rendered bacteriostatic may be made viable by adding the phospholipid cephalin.

Tyrothricin is extremely stable as a powder or in alcoholic solution. It is usually made up in a 2 per cent alcoholic solution. One-half cubic centimeter of this solution in 100 cc. of sterile distilled water gives a 1:10,000 suspension, which from our work appears to be a safe concentration for clinical use, although *in vitro*, dilutions of 1:1,000,000 often kill pneumococci and streptococci, but not staphylococci. It must be emphasized that the tyrothricin group of agents are toxic intravenously and subcutaneously, but are harmless when used locally as a contact agent. In experimental animals intraperitoneal injection appears to be harmless.

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From the Johns Hopkins Hospital.

1. Pickrell, Kenneth L.: A New Treatment for Burns, Bull. Johns Hopkins Hosp. 69:217-221 (Aug.) 1941.

2. Dubos, R. J.: Studies on a Bactericidal Agent Extracted From a Soil Bacillus. J. Exper. Med. 70:1-10 (July) 1939.

Penicillin

The third and most promising bactericidal agent is penicillin, accidentally discovered by Fleming[3] in 1929. This observer found that routine bacterial plates, contaminated with the common bread mold Penicillium, showed zones of inhibited bacterial growth where the mold alighted. There are hundreds of varieties of this mold easily captured almost everywhere, even at high altitudes. Fleming's original Penicillium strain most closely resembles Penicillium notatum. Bactericidal activity varies greatly with different strains.

Penicillium is easily grown in rectangular flat-bottomed bottles on a liquid amino acid medium, at room temperature. In seven to twelve days it entirely covers the surface of the medium with a thick, wrinkled, grey-green growth. The so-called harvesting of the material must be done at the proper moment, as its greatest activity is lost unless it is stopped at pH 7 to 7.5. The underlying liquid is then passed through a Seitz filter. The clear, amber-colored filtrate contains the crude bactericidal agent, penicillin. Its strength is determined by titration against standard bacterial cultures.

Penicillin in this liquid form is most unstable and will lose its potency in about four days if left in stoppered bottles at room temperature. However, if the freshly filtered material is kept frozen its activity is maintained for about two weeks. At the present time this is the most practical method for maintaining a supply for clinical and experimental use as a local application. Dry concentrates and the sodium salt have been purified for intravenous use and are somewhat more stable. Likewise, the barium salt and the ethyl and methyl-ester have been reported. However, these more purified types are still in the laboratory stage and are not available except for very carefully controlled experimental clinical trial.

Unlike tyrothricin, penicillin, which is water-soluble, may be given intramuscularly or intravenously as well as used locally. It is absorbed by the subcutaneous tissues and in the gut, and is excreted by the kidneys. Reclamation of penicillin from the urine is possible. Some observations indicate that penicillin may also be concentrated in the gallbladder. This fact might open interesting fields in the treatment of cholecystitis. Penicillin is believed to be somewhat bactericidal, but mostly it acts as a bacteriostatic agent, its effectiveness being due to interference with multiplication of bacteria. Penicillin differs from the sulfonamides in that its action is not nullified by pus, peptones or P-amino benzoic acid. It is inactivated by the acid of the gastric juice, however. According to all indications, penicillin is nontoxic.

In general, penicillin is bacteriostatic for gram-positive organisms—including anaerobic streptococci and anaerobic gas bacilli—and to a much lesser extent for gram-negative bacteria. However, as isolation of the active principle develops, indications point to some degree of inhibitory activity toward all bacteria and perhaps some viruses. Kocholaty[4] has recently reported the isolation of an antibacterial substance called penatin which inhibits the growth of fifty pathogenic and non-pathogenic organisms tested in dilutions of not less than 1:10,000,000.

Clinical Use of Penicillin and Tyrothricin

Clinically, penicillin and tyrothricin have been tested at the Johns Hopkins Hospital for the past two years. These therapeutic agents have been applied locally in a large number of cases, covering every phase of otolaryngology. For a comprehensive and true estimation of values it was found necessary to make a thorough bacteriological study of each individual case. This involved complete studies of each organism and its reaction to tyrothricin and to penicillin at various dilutions. A method of bacterial titration was used.

At present, as was stated earlier, this material is still in the process of correlation and tabulation. However, of the interesting findings noted so far it may be mentioned that there is not only bacterial group sensitivity, but also a bacterial strain sensitivity. In general, Staphylococcus aureus is more susceptible to tyrothricin than is Staphylococcus albus, but pneumococci and streptococci are more sensitive than either of these. Certain strains of the same bacterial group are more sensitive than others. In a group of 60 patients with hemolytic Staphylococcus

3. Fleming, A.: An Antibacterial Action of Cultures of Penicillium, With Special Reference to Their Use in Isolation of B. Influenzae, Brit. J. Exper. Path. 10:226-236 (June) 1929.

4. Kocholaty, Walter: Purification and Properties of the Second Antibacterial Substance Produced by Penicillium Notatum, Science, 97:186-187 (Feb. 19) 1943.

aureus infection, titration showed that 9 (15.3 per cent) were insensitive to tyrothricin and 12 (20.3 per cent) to crude penicillin. Irrigation of the sinuses with the therapeutic agent which most effectively inhibits or kills the infecting bacteria will give better results in acute maxillary sinusitis than in chronic maxillary sinusitis due to the same organism. The explanation for this is that the bacteria in the acute phase are on the surface of the mucous membrane, and in the chronic stage are deep within the glands and submucosal tissue. Tyrothricin is not absorbed and is effective only when it comes in direct contact with bacteria. Penicillin is absorbed to a greater extent, but to be most effective should be in direct contact with the infecting bacteria for several hours. Thus, in chronic infections, these microbiotic agents are much more effective when used to supplement surgical operations. Sometimes, after a period of treatment, certain bacteria become resistant to the therapeutic agent. Bacterial growth curves, using various concentrations of the bactericidal agents, when plotted against time, show that tyrothricin acts almost immediately, whereas crude penicillin reacts after an interval of several hours. It is only through bacteriological studies of each individual case that the therapeutic tools at hand may be used more intelligently. Unless these facts are known, clinical results cannot be evaluated.

By the local use of these bactericidal agents it is believed that the postoperative edema, pain, purulent discharge and consequent formation of infected granulation tissue are greatly reduced or completely abolished. Likewise, postoperative care and hospitalization time is reduced.

Radon

The fourth therapeutic agent, radon, has been used in the Johns Hopkins Hospital for sixteen years for certain otologic conditions. The principles of the recognition, treatment, and prevention of hearing impairment center about the following concepts:

1. Impaired hearing for high tones, with good hearing for low tones, is the earliest symptom of middle ear as well as of inner ear deafness in children.
2. Recurrence of adenoids after operation on young children is so common that it must be regarded as normal. This recurrent lymphoid tissue may impair the function of the eustachian tubes and cause a low grade tubo-tympanic catarrh which may lead to chronic progressive deafness.
3. Recurrent or hyperplastic nodules of adenoid tissues in and around the pharyngeal orifice of the eustachian tubes are so located that they cannot be removed surgically.
4. Every type of deafness seen in adults is also found in children. In most types the earliest symptom is a loss of hearing for high tones, and for their recognition the tones above 8000 double vibrations must be tested.
5. In order to have good hearing the eustachian tubes must function normally. Impaired function of the eustachian tubes in children is caused by regrowth of the lymphoid tissue in the nasopharynx. In order to discover this condition the nasopharynx must be examined with the nasopharyngoscope.
6. Early recognition of impaired hearing for high tones, long before the hearing of speech is affected, and radiation of the nasopharynx to restore the patency of the eustachian tubes, is the only method for the prevention of progressive deafness of this type. The only hope is early recognition and treatment, before irreparable damage to the mucous membrane of the middle ear and ossicular chain has occurred.
7. Lymphoid tissue is so sensitive to radiation that the dose employed in the treatment of the nasopharynx is far below the amount that could cause any irritation or injury to the mucous membranes or surrounding structures.

Aside from the preventive treatment of deafness, the applications of radon therapy have been so broadened and extended that today it is one of the most useful therapeutic agents in the field of otolaryngology.

Radon is applicable to patients of all ages. Especially in infants and young children, recurrent otitis media, caused by chronic infection of the nasopharynx associated with lymphoid hyperplasia, usually can be cured promptly if radon is applied to the nasopharynx and sulfathiazole powder insufflated locally into the canal, after carefully removing all discharge. Nasopharyngitis and the associated chronic cough are also benefited by this procedure. Radon is a most useful

agent in cases of nasal obstruction due to hypertrophied adenoids in infants. The frequency and severity of acute coryza are reduced when lymphoid tissue has been thoroughly removed, either by surgical operation or irradiation.

Radon is also of value to patients who are either too ill or too poor a surgical risk for operative procedure, and for those in whom the adenoids have recurred following surgical removal. This is common in children. Radon is also used for patients whose adenoids alone are causing symptoms. The use of radon on patients in the out-patient department and in private offices often makes hospitalization, anesthesia and surgical operations unnecessary. This is particularly valuable in this period when almost all hospitals are overcrowded.

With a word of caution, we offer an observation as yet unproved. About nine months ago it was observed that among the hundreds of children being treated for the prevention of deafness there were a number with asthma. Many were allergic to the usual inhalants, but had failed to respond to desensitization, removal of the allergic agent, or change in diet. These patients had hypertrophied adenoids, and a history of frequent colds associated with asthmatic attacks. Many required adrenalin injections to relieve the acute attacks. Typical asthmatic attacks occurred at intervals, varying from two or three days to a month. Some had a seasonal relationship. Following radon treatments the severity and frequency of the attacks became less, and in some patients the asthma disappeared altogether. One patient with a history of weekly attacks has had no asthma during six months of observation.

We have under way a research program for adult and child asthmatics, in which each case is carefully studied from the pediatric, the otolaryngologic and the allergic-medical standpoint. Only a long-range program will determine the validity of the above observations. Even if only certain types of asthmatics are benefited, the radon treatment will be worth while.

Theoretically, the effect of radon applied to the nasopharynx in these cases might be due to reduction of secretions, to changes in the absorption of allergic substances by nasal and nasopharyngeal tissue, or to removal of the nasopharyngeal "culture tube" where sensitizing bacteria may thrive.

Summary

A 2.5 per cent sulfadiazine solution spray is non-toxic, is rapidly absorbed by mucous membranes, and when used frequently and in sufficient amounts will inhibit the growth of pyogenic organisms, particularly of the beta hemolytic Streptococcus, in the upper air passages. It is particularly valuable in the treatment of infections of the pharynx and nasopharynx and for the control of the associated cough. If treatment of acute coryza is started early there is a reduction in the duration of the disagreeable symptoms and an almost complete absence of complications.

Tyrothricin, water insoluble, is isolated from cultures of the aerobic sporulating Bacillus brevis and has been further fractionated into gramicidin and tyrocidine. When used locally in suspension it inhibits the growth of certain organisms, in general the gram-positive group. It is extremely toxic intravenously. It is most valuable in the treatment of acute infections, and as a supplement to surgery in the treatment of chronic infections.

Penicillin is not toxic, either locally, intravenously, or orally. It is water soluble and is isolated from the mold Penicillium notatum. It interferes with multiplication of bacteria, and is slower acting than tyrothricin. In general it inhibits the gram-positive group of bacteria, but as isolation of the active principle continues, there are indications that it may be effective against a much broader group of bacteria.

Organisms may become resistant or fast to both penicillin and tyrothricin. Some strains of a bacterial group (especially of staphylococci) may be entirely unaffected by either agent, or may vary enormously in their sensitivity. Anaerobic streptococci, and the Lancefield B group, so often found in otolaryngological conditions, are not affected by sulfonamides, but are sensitive to both tyrothricin and penicillin. For a better evaluation and interpretation of clinical results we must make bacteriologic studies on each patient.

Radon or radium salts, applied through a small applicator to the nasopharynx, has proven itself invaluable in the prevention and treatment of certain forms of deafness associated with obstruction of the eustachian orifices. If it is carefully used there are no burns, crust formations or disagreeable

symptoms following treatment. This is based on observations at the Johns Hopkins Hospital on its use in children and other patients for the past sixteen years. In many cases, end results are more satisfactory than those following surgical removal of the adenoids, since lymphoid tissue is an integral part of the mucous membranes of the nasopharynx and is so diffuse that it cannot all be removed at operation. Recurrence after operative removal is so commonly found that it must be regarded as normal.

Aside from its use in the treatment or prevention of deafness, irradiation has wide uses in many other conditions of the nasopharynx. Observations on its use in patients with asthmatic bronchitis are mentioned.

In conclusion, the object of this report is to arouse interest in these four local therapeutic agents, so that their larger use may prove and extend their true values.

SOME EPIDEMIOLOGIC ASPECTS OF POLIOMYELITIS, WITH REPORT OF FIFTEEN CASES

L. D. HAGAMAN, M.D.

LENOIR

The lack of any certain knowledge regarding epidemiology, the difficulties of diagnosis, and the uncertainty regarding suitable therapeutic measures have made poliomyelitis one of the most trying problems which confront the family physician and the health officer. Likewise the lack of effective methods of control and the dread of paralysis have stamped it on the public mind as a peculiarly terrifying disease, in spite of the relatively low rate of attack.

Heine[1] established poliomyelitis as a clinical entity a little more than a century ago. Most of our present knowledge of this disease, however, has gradually evolved from the medical investigations of the past three decades.

The theory that poliomyelitis was due to a spontaneous or primary degeneration of the anterior horn cells of the spinal cord was generally accepted until 1909, when Landsteiner and Popper[2] transmitted the disease to monkeys by intraperitoneal inoculation with a suspension of human poliomyelitic nerve tissue. This original method of transmission has become of increasing interest in the light of the more recent theories on the pathogenesis of this disease.

Shortly after the successful inoculation of monkeys with infected human tissues, Flexner and others[3] demonstrated that the disease could be transmitted indefinitely from animal to animal, thereby providing a firmer foundation for the theory that the disease is infectious. It was also noted during this series of experiments that there is a wide variation in the virulence of different virus strains[4]—a fact which had frequently been pointed out in previous epidemics of human poliomyelitis.

A strain of streptococci was next implicated by a number of investigators[5] as the etiologic agent; however, evidence which successfully refuted this view was shortly brought forth[6], and the case against this theory was finally closed when it was shown that the streptococcus was a secondary invader[7].

Evidence pointing to the virus nature of the disease has continued to accumulate, thereby supporting Flexner's observations in the use of the Berkfeld filter in his animal-to-animal experiments.

A knowledge of the mode of transmission and portals of entry of the poliomyelitic virus are essential for the successful control of this disease, and consequently are of particular interest to the epidemiologist.

The view, which has been widely held, that the port of entry is the nasopharyngeal

Read before the Health Officers' Section of the North Carolina Public Health Association, Raleigh, May 10, 1943.

1. Heine, J.: Beobachtungen ueber Lahmungszustaende der untern Extremitaeten und deren Behandlung, Stuttgart, F. H. Koehler, 1840.

2. Landsteiner, K. and Popper, E.: Uebertragung der Poliomyelitis acuta auf Affen, Ztschr. f. Immunitaetsforsch u. exper. Therap. 2:377-390, 1909.

3. Flexner, S. and Lewis, P.A.: The Transmission of Acute Poliomyelitis to Monkeys, J.A.M.A. 53:1639 (Nov. 13) 1909.

4. (a) Flexner, S., Clark, P. F., and Amoss, H. L.: A Contribution to the Epidemiology of Poliomyelitis, J. Exper. Med. 19:195-204 (Feb. 1) 1914. (b) Flexner, S. and Amoss, H. L.: Immunizing Strain of Virus of Poliomyelitis, J. Exper. Med. 39:625-630 (May) 1924.

5. (a) Rosenow, E. C.: Report on the Treatment of 58 Cases of Epidemic Poliomyelitis With Immune Horse Serum, J. Infect. Dis. 22:379-426 (April) 1918; (b) Rosenow, E. C.: Treatment of Acute Poliomyelitis With Immune Horse Serum, J.A.M.A. 71:433-438 (Aug. 10) 1918; (c) Nuzum, J. W.: The Production of an Antipoliomyelitic Serum, J.A.M.A. 68:24-25 (Jan. 6) 1917; (d) Mathers, G.: Some Bacteriologic Observations on Epidemic Poliomyelitis, J.A.M.A. 67:1019 (Sept. 30) 1916; (e) Mathers, G.: The Etiology of Acute Epidemic Poliomyelitis, J. Infect. Dis. 20: 113-124 (Jan.) 1917.

6. (a) Bull, C. G.: The Pathologic Effects of Streptococci From Cases of Poliomyelitis and Other Sources, J. Exper. Med. 25:557-580 (April) 1917; (b) Amoss, H. L. and Eberson, F. J.: Therapeutic Experiments With Rosenow's Anti-Poliomyelitic Serum, J. Exper. Med. 27:309-317 (Feb.) 1918; (c) Amoss, H. L. and Eberson, F. J.: An Experimental Test of Nuzum's Antipoliomyelitic Serum, J. Exper. Med. 28:323-331 (Sept.) 1918.

7. Long, P. H., Olitsky, P. K., and Stewart, F. W.: Role of Streptococcus in Experimental Poliomyelitis of Monkey, J. Exper. Med. 48:431-448 (Sept.) 1928.

region and more specifically the olfactory area of the nasal mucosa, has rested largely on evidence that the disease could be produced by injecting the virus into the tonsillar-pharyngeal region of the experimental animal and that the animal could be protected by blockage of the olfactory tract. However, there is a growing belief, based on rapidly accumulating evidence, that there are several ports of entry and that the olfactory bulb route, so commonly used in experimental work, is apparently of little importance in the pathogenesis of poliomyelitis in man.

The intestinal tract is under strong suspicion as a frequent port of entrance. Numerous investigators[8] have found the poliomyelitic virus in feces and sewage, and in the intestinal wall itself. These findings would suggest a huge potential reservoir of infection; however, the comparatively low attack rate, when taken with the evident fact that a high percentage of the population has an acquired immunity, forces one to seek other factors in the pathogenesis of this disease.

Toomey[8h] has suggested that the poliomyelitis virus has an obligate affinity for grey nerve fibers and that healthy myelin of peripheral nerve fibers stops the spread of the virus to the central nervous system. He suggests, furthermore, that any damage or injury to the peripheral nerves, either mechanical or physiological, creates conditions whereby the virus can more easily reach the grey nerve fibers. This theory would serve to explain many of the apparent inconsistencies in the epidemiology and pathogenesis of poliomyelitis.

The role of mechanical trauma and strain in the production of this disease has frequently been pointed out[9]. Mueller[10] believes that the preceding trauma is a very important factor in the production of the disease and suggests that the fever which usually precedes the meningeal symptoms is due to other infections, which produce an infectious type of trauma. He also points out that such things as overexertion, excessive sun exposure, and mechanical injury may all act as traumatic factors in the production of the disease. The increased incidence, particularly of the highly fatal bulbar type, following tonsillectomies[11] could be explained on the basis of this theory.

Deficiencies of certain vitamins[12], notably B and C, have been suggested as another factor predisposing to the development of poliomyelitis; however, preliminary studies on experimental animals[13] would indicate that a maximum natural resistance to the virus of poliomyelitis is obtained from a minimum full maintenance level of thiamin intake.

Report of Cases

A clinical study[14], with particular emphasis on individual and environmental factors, was made on 15 cases of poliomyelitis which occurred in Caldwell County during the summer months of 1942 and January, 1943. The attack rate, based on the area involved, was 0.4 per 1,000 population. The ages of the patients ranged from 6 months to 13 years, with an average of 4.6 years. There were 2 deaths, both of which were due to the bulbar type of the disease.

The first case occurred in the first two-week period of July, 1942, the epidemic gradually attaining a peak in the last half of August, when 4 cases were reported. Fol-

8. (a) Sabin, A. B. and Ward, R.: Natural History of Human Poliomyelitis; Distribution of Virus in Nervous and Non-Nervous Tissues, J. Exper. Med. 73:771-793 (June) 1941: (b) Howe, H. A. and Bodian, D.: Effect of Spinal Transection on Spread of Poliomyelitis Virus in Nervous System of Rhesus Monkey; Refractoriness of Nerve Cells to Poliomyelitis Virus After Interruption of Their Axones; Poliomyelitis in Chimpanzee; Neuropathological Evidence on Portal of Entry Problem in Human Poliomyelitis, Bull. Johns Hopkins Hosp. 69:86-91, 92-133, 149-181, 183-215 (Aug.) 1941; (c) Bodian, D. and Howe, H. A.: Rate of Progression of Poliomyelitis Virus in Nerves; Pathology of Early Arrested and Non-Paralytic Poliomyelitis, Bull. Johns Hopkins Hosp. 69:79-85, 135-147 (Aug.) 1941; (d) Trask, J. D., Paul, J. R. and Vignec, A. J.: Poliomyelitic Virus in Human Stools, J. Exper. Med. 71:751-763 (June) 1940; (e) Paul, J. R., Trask, J. D. and Gard, S.: Poliomyelitic Virus in Urban Sewage, J. Exper. Med. 71: 765-777 (June) 1940; (f) Paul, J. R., Trask, J. D. and Culotta, C. S.: Poliomyelitic Virus in Sewage, Science 90:258-259 (Sept. 15) 1939; (g) Howe, H. A. and Bodian, D.: Portals of Entry of Poliomyelitic Virus in Chimpanzee, Proc. Soc. Exper. Biol. & Med. 43:718-721 (April) 1940; (h) Toomey, J. A.: Attempts to Isolate Poliomyelitis Virus From Stools of Human Beings and Experimental Animal, Arch. Pediat. 56:693 (Nov.) 1939.

9. Editorial: Trauma and Strain in Relation to Poliomyelitis, J.A.M.A. 116:2506 (May 31) 1941.

10. Mueller, H.: Zur Frage der Disposition zu Poliomyelitis, Montaschr. f. Kinderh. 87:263-269 (March 24) 1941.

11. (a) Fischer, A. E., Stillerman, M. and Marks, H. H.: Relation of Tonsillectomy and Adenoidectomy to Incidence of Poliomyelitis, With Special Reference to Bulbar Form, Am. J. Dis. Child. 61:305-321 (Feb.) 1941; (b) Krill, C. E. and Toomey, J. A.: Multiple Cases of Tonsillectomy and Poliomyelitis, J.A.M.A. 117:1013 (Sept. 20) 1941; (c) Aycock, W. L.: Tonsillectomy and Poliomyelitis, Epidemiologic Considerations, Medicine 21:65-94 (Feb.) 1942.

12. (a) Helms, Karen: Acute Anterior Poliomyelitis and Vitamin B Deficiency, M. J. Australia 1:717-723 (June 14) 1941; (b) Toomey, J. A.: Absorption of Poliomyelitic Virus by Possibly Deficiently Medullated Nerves, Am. J. Dis. Child. 60:548-551 (Sept.) 1940.

13. Foster, C., Jones, J. H., Henle, W. and Dorfman, F.: Response to Murine Poliomyelitis Virus (Lansing Strain) of Mice on Different Levels of Thiamin Intake, Proc. Soc. Exper. Biol. & Med. 51:215-216 (Nov.) 1942.

14. Valuable assistance in the compilation of these statistics was rendered by Miss Ruth Council, Division of Crippled Children, State Board of Health, Mrs. R. L. Bailey, Public Health Nurse, Caldwell County, and by various physicians of Caldwell County whose cases were used in this survey.

Table 1
Seasonal Incidence of Poliomyelitis in Caldwell County
Based on Bi-Weekly Reports

	Number of Cases
No Cases Reported from February through June, 1942	
	1 2 3 4
July, 1942	
First half	
Second half	
August, 1942	
First half	
Second half	
September, 1942	
First half	
Second half —None	
October, 1942	
First half	
Second half —None	
November, 1942	
First half —None	
Second half —None	
December, 1942	
First half —None	
Second half —None	
January, 1943	
First half	
Second half —None	

lowing this there was an abrupt drop in the incidence of the disease, with only 2 cases occurring in the months of September and October; however, there were 2 more cases during the second week of January, 1943. Most of the cases were in widely scattered sections of the county, 73 per cent being found in the rural areas; and in only one instance could a history of direct contact with another case be established.

It was found that 80 per cent of the children who developed poliomyelitis in this outbreak lived within a short distance of a stream, in no case being farther than 150 yards away. One-third of the patients had either played or had been swimming in these streams within two weeks before the onset of the disease. Seven cases occurred in the area drained by one particular creek, while 3 patients lived on another stream. These two areas contained two-thirds of all the cases reported in the county.

Sixty-six per cent of the patients gave histories and exhibited evidence of numerous insect bites which had occurred within twelve days before the onset of the disease. Unfortunately, the type of insect could not be determined in the majority of cases.

Forty per cent of the patients gave a history of being unusually chilled or fatigued within forty-eight hours before the appearance of the first symptoms. Usually this fatigue or chill resulted from swimming.

The onset of paralysis of the left arm in one case occurred twenty-four hours after the patient had bruised the arm in a minor accident, while another patient showed definite clinical evidence of vitamin B deficiency.

Since no experimental animals were used in the study of this particular outbreak of poliomyelitis, the results are naturally inconclusive; however, the clinical facts tend to bear out certain contentions of previous investigators—namely, that a huge store of poliomyelitis virus is widely disseminated in nature; that contact *per se* is not sufficient to explain the transmission of the disease; and that such things as trauma, fatigue, chilling, and infection often act as predisposing factors in the production of the disease.

Control Measures

What control measures should be taken by the health officer, in view of our limited knowledge of the epidemiology of this disease? While we have no very effective methods of control, there are certain measures, based on our more recent knowledge, which we are justified in taking.

1. *Quarantine Restrictions:* While evidence indicates that poliomyelitis is very mildly contagious, we are still justified in applying proper isolation and quarantine measures in the individual case. The question of the advisability of closing schools, churches, and theaters often arises during an epidemic. As a rule we are probably not justified in closing these places to children; however, it should not be forgotten that there is often a concurrent outbreak of fear which is about as difficult to handle as the actual poliomyelitis epidemic. The apprehension of the public is often allayed by applying community-wide quarantine restrictions.

2. *Swimming Pools:* As a rule, swimming pools should be closed to children during an epidemic of poliomyelitis. This view is based on two facts—namely, that there is danger of water being contaminated by sewage, and that ordinary chlorination of water does not destroy the poliomyelitis virus[15].

3. *Personal Hygiene:* The public should be informed of the dangers of such predis-

15. Sabin, A.B.: Etiology of Poliomyelitis, J.A.M.A. 117:267-269 (July 26) 1941.

Table 2
Summary of Case Records

Case	Race	Sex	Age	Chill	Fever	Nausea	Vomiting	Headache	Drowsiness	Irritability	Sore Throat	Stiff Neck	Family History of Pol.o	Unusual Chill or Exhaustion Prior to Symptoms	History of Recent Insect Bites	Played in Water Within Two Weeks of Onset	Kenney Treatment	Cast Method of Treatment	Symptomatic Treatment	Died
1	W	M	25 mo.		X	X	X	X				X		X	X	X			X	
2	W	F	23 mo.		X			X		X		X			X			X		
3	W	F	7 yr.	X	X	X	X	X				X	X	X	X	X	X			X
4	W	F	6 yr.		X				X	X	X		X(?)	X	X	X			X	
5	W	M	4 yr.	X	X	X		X	X			X							X	X
6	W	F	13 yr.		X			X			X			X					X	
7	W	M	4 yr.		X							X							X	
8	W	F	4 yr.		X	X	X		X	X					X	X			X	
9	W	M	23 mo.		X										X			X	X	
10	W	F	20 mo.		X			X		X					X		X			
11	W	M	6 mo.		X	X	X			X	X		X		X		X			
12	W	F	10 yr.		X			X	X	X		X		X	X	X	X			
13	W	M	6 yr.		X	X	X	X				X			X		X		X	
14	W	F	4 yr.		X	X	X	X						X			X			
15	W	M	32 mo.		X	X		X	X	X			X				X			

posing factors as overexertion, chilling, overexposure to the sun, and trauma.

4. *Disinfection:* The virus of poliomyelitis is readily destroyed by oxidizing agents such as hydrogen peroxide, potassium permanganate, and ultra-violet rays. Heat of 55 C. for five minutes destroys the virus. It should be remembered that the causative agent is particularly resistant to the phenol preparations and to ordinary water chlorination.

5. *Sewage Control:* All excreta of poliomyelitis patients should be treated with potassium permanganate or some other oxidizing agent. Sewage should not be discharged into any stream.

6. *Water:* Unless we are reasonably sure that water is not contaminated it should be boiled during the period of a poliomyelitis outbreak.

7. *Tonsillectomies:* Children who have had recent tonsillectomies are much more susceptible to the bulbar type of the disease; therefore, operations on the nose or throat should be postponed in those localities where poliomyelitis is prevalent.

8. *Insect Control:* There is some evidence that the poliomyelitis virus may be carried by insects, and therefore control measures should be taken.

Summary

1. A review of literature on the epidemiologic aspects of poliomyelitis is presented.
2. A study of 15 cases of poliomyelitis which occurred in Caldwell County is made, with particular emphasis on the epidemiology of the disease.
3. A summary of the public health measures which should be taken in attempting the control of poliomyelitis is given.

A METHOD OF INTRAVENOUS IODINE MEDICATION FOR THE RAPID PREPARATION OF PATIENTS WITH DIFFUSE TOXIC GOITER FOR OPERATION

ADDISON G. BRENIZER, M. D.
CHARLOTTE

In 1867, Trousseau used by mistake tincture of iodine, instead of tincture of digitalis, in a severe case of exophthalmic goiter, with marked benefit. It was not until the publication of Plummer's classic work, however, that the use of iodine became general.

Twenty years ago one of my patients was in a thyroid crisis following operation. She was delirious, restless, and incoherent, with a temperature of 107 and a pulse rate almost beyond count. Desperately, as when one massages a failing heart or injects adrenalin into it, I gave this patient 100 drops of Lugol's solution in 500 cc. of salt solution, and repeated the dose. The patient was better within two hours, and by the next morning the delirium had subsided, the temperature was down, and the pulse was slower. The remarkable part of the picture was not so much the slowing of the pulse as the improvement of the toxemia.

It is my belief that the mechanism of the beneficent action of iodine depends upon the conversion of toxic diiodotyrosine into thyroxin.

I have used the following method of preparing patients with diffuse thyrotoxemia for operation. Toxic nodular goiters can also be so prepared, but their response is not so prompt as that of the diffuse thyrotoxic type.

The patient is kept at absolute rest in the hospital, with sedation and a high calorie diet. A daily intravenous injection of 500 to 1000 cc. of 10% glucose with 100 to 150 drops of Lugol's solution or organidin is given. The metabolic rate decreases rapidly and the patient is usually ready for operation within a week. The clinical picture of improvement and the patient's ability to hold his breath are the chief criteria for operation. The operation should not be performed, of course, without due consideration of the usual laboratory procedures: the hippuric acid test of liver function, the cholesterol content of the blood, galactose tolerance determinations, and basal metabolic rates. After all, however, the clinical evaluation of the patient is the most important criterion. It is rare that a patient so treated for five days, who can hold his breath for three-fourths of a minute, cannot tolerate a thyroidectomy. The same treatment is continued for two or three days following the operation.

NON-MEDICAL VIEWS OF THE WAGNER-MURRAY BILL

SOCIALIZED MEDICINE
WAGNER-MURRAY SENATE BILL 1161

JUDGE L. R. VARSER
LUMBERTON

The United States began as thirteen independent, though weak and struggling, colonies formed into states along the Atlantic coast. When the first effort at government, called a Confederacy, proved insufficient on account of its weakness and lack of coherence, the Federal Constitution was proposed and adopted in practically its present form, and then amendments were adopted for the purpose of declaring certain inalienable rights. These rights preserved in the Federal Constitution were not created by it, for they are a part of the rights of every free man, and the purpose of declaring them in these Constitutional amendments was to preserve and to secure to free men what was theirs already.

It was provided in the Tenth Amendment that the powers not delegated to the United States by the Constitution, nor prohibited by it to the states, are reserved to the states respectively and to the people. When this Constitution was adopted, each of the several states had its own constitution. North Carolina adopted its constitution for the preservation of the American Union and of our civil, political and religious liberties, and for the more certain security thereof. In its Declaration of Rights it preserved the great, general and essential principles of liberty and free government and recognized that all men are endowed by their Creator

Read before the Rotary Club, Lumberton, on August 27, 1943.

with certain inalienable rights, including life, liberty, the enjoyment of the fruits of their own labor, and the pursuit of happiness. Until we cease to be men, we have the power to preserve these rights and to prevent the destruction of these rights, or any encroachment thereon. The people of these several states were unwilling to follow the course of England in respect to its Constitution, but determined that our Constitutions, state and federal, should not be left to the varying views of any legislative or judicial department of the government, but should be protected by and preserved in written documents.

The government thus set up in the several states and in the federal union was a republic—a representative democracy with a judicial department to declare what the law is, with an executive department to enforce the law as written, and with a legislative department to exercise the powers granted in the Constitution. This is not a socialistic government, whatever may be the indications and practices of any particular administration. The power does not exist to make it so; the courage and the character of its free men will keep it a republic for free men, although there are, and may be, efforts to make it into a socialistic state, with total powers. It may be observed that whenever the government increases in power its citizens decrease in happiness.

The Cost of Socialized Medicine

The proposed Wagner-Murray Bill is more far-reaching than any socialist proposal ever introduced in the Congress. It seeks to take from the individual who is within its purview all rights with respect to his medical care, and that of his family, and in lieu thereof affords him political medical service under the Surgeon General of the United States, who is created a dictator in all things medical, surgical and sanitary. Its humanitarian purpose is to take charge of a vital segment of the life of the people so that they shall not have the privilege of competent medical service of their own choosing.

Financial Cost

The cost proposed is staggering. The initial requirement for the set-up is $3,000,000,000.00. With this sum its dictator-head could allocate:

$600,000,000.00 for administrative cost;

$600,000,000.00 for the salary, average, of every effective physician in the United States at $5,000.00 per year;

$671,683,950.00 to buy every available bed in all non-government owned hospitals, for 365 days each year at $5.00 per day;

$959,750,162.50 to pay $2.50 per day for every government-owned hospital bed for 365 days;

$168,565,887.50 for drugs and medicines.

Cost in Service

This plan will substitute bureaucrats and politicians for doctors. It is possible that a person may be a member of all three of these groups, but it is not probable. Of course, one may be a doctor and join the other two groups, but he will then cease to be an effective physician or surgeon. It is necessary if one is a bureaucrat that he also be a politician, and if this bill is enacted into law all politicians will be bureaucrats. This bill will lower the standards of the medical profession. It will be a legitimate construction of the powers sought to be conferred on the Surgeon General that he prescribe the standards. He has the express powers to establish qualifications for specialists; to determine the number of individuals for whom any physician may provide service; to determine arbitrarily what hospitals or clinics may provide service for patients; to establish fee schedules for services; to hire doctors and to establish rates of pay—possibly for all doctors. This bill as proposed is so broad that it will destroy the whole American system of medical care. The history of such practices shows conclusively that the standards of the medical profession are lowered and the knowledge of physicians is materially and progressively lessened. This is the necessary result when individual enterprise, ambition and the desire to excel are stricken down.

Cost to the Public

The public has not demanded this drastic adoption of socialism; neither have the sick people or the doctors clamored for it. It is a creature pure and simple of the politicians who believe in these socialistic practices. It certainly has no relation to the conservation of public finance. It will require a tax of 12 per cent on all salaries up to $3,000.00—6 per cent to be paid by the employee and an equal amount to be paid by his employer. The public will immediately change its attitude toward physicians and surgeons. You

cannot select your doctor unless your selection is approved by the powers that be. You will have political service and not medical service. The confidential relation between patient and physician will be destroyed and an attitude of antagonism between the patient and the politically selected physician will be substituted in its stead. The public will lose, not only the enormous sum of money contemplated, but the personal interest of the physician, confidence in the physician and that high quality of service that comes from the individual responsibility which the physician now carries in his professional relations. There will be no more discoveries as the result of individual ambition. There will be no motive for individuals to endow medical research and medical education. It will be a State matter and the State will control, not only what the physician does, but what he thinks. Doctors will become automatons, and the dictator Surgeon General will be the master.

Conclusion

This scheme cannot work. Experience teaches that it is impracticable. There is no demand for it, except from the politicians who desire to change the existing order. The chief features of this scheme are that it will involve a limitless expenditure of money which the taxpayers shall pay and that it will include within its terms some thirty million people and thereby, in view of the large number of lay-employees who will have jobs in the gigantic scheme, it will be a powerful political organization. It will remove one more individual obligation and drive us one step nearer slavery.

The lay-public and the doctors can defeat this vicious scheme. It will take work. Its proponents are organized and are already employed by the government, or are drawing salaries therefrom in political jobs. The bill is pending in both the Senate and the House of Representatives. It will be heard by the Senate Finance Committee and the House Ways and Means Committee. It is necessary, if this movement is to be defeated, that every man shall do his duty.

WHAT TO DO IN CASE OF GALL-STONES
or
Medical Care Under The Wagner Act

This is a little drama which might take place in the office of your favorite doctor if the Wagner-Murray-Dingell Bill is passed by Congress.

By Dougald Coxe
Red Springs, N. C.

Time: April, 1945 - Mid-Morning
Scene: Your doctor's office

Dramatis Personae

The doctor.....Dr. Jason McLean
Civil Service Nurse.....Miss Bee Bureaucracy
Voice on the phone.....McGillicuddy
Jane, John and Bobby Citizen.....Patients
Johnny Serviceman....Just home from the Pacific, and a veteran of North Africa

Music — Lament from "Hippocrates"....Poli Titian

The curtain rises. Seated at a desk, upstage center, is Dr. McLean—a genial man of the old family-physician type. Rugged and of an independent nature, he is not too well dressed. He is working rapidly and with evident distaste on a pile of papers, quite obviously government forms.

To one side, back of desk, is a row of new files conspicuously marked "Property of U. S. Government." At other side is door marked:

Consultation Room

Arranged and Equipped for Minor Operations
and General Medical Practice by
U. S. HEALTH DEPARTMENT
Grove City Division
CHESTER P. McGILLICUDDY, Chief Supervisor
Phone CAP-itol 7966

Equipment Inspected and Approved
By
John P. Ravioli, District Inspector

Accounts Audited and Approved
By
Angus J. Greene, Comptroller Area II

Patient Limit
Adults.....1975
Children..... 525

All Complaints of Patients Are
To Be Sent Direct to
Hon. Cyrus K. John, Supreme Director
U. S. Public Health Service
Washington, D. C.

Dr. McLean—(hangs up telephone receiver — calls loudly)—Miss Bee.

(Miss Bureaucracy enters from right, downstage, through door marked "Reception Hall." She's small, young and wears her U. S. Health Dept. Uniform with mingled awe and pride. She carries a pile of papers.)

Miss B—Yes, Dr. McLean.

Dr. M—Have we completed form M-3464? I know we have mailed the usual daily and weekly reports. I have just finished the hourly reports up to 8:30 today. But I see no record of our semi-monthly M-3464 in the files. District Chief Supervisor McGillicuddy has been on the phone a half-dozen times

in the last half-hour saying the M-3464 has not reached him yet.

Miss B—I have it here now. There are so many questions to answer—16 pages of them. And they wanted information on so much matter of which we had no record, I have been on the other phone trying to get it from the various patients we have treated during the past two weeks.

Dr. M—Have any patients come in? Are there any real sick ones? Maybe we had better attend to them before we finish these reports.

Miss B—Yessir. There are several out there. One or two seem to be in a pretty bad way. There's one coming in now from the mill. He had a leg cut off down there. Somebody at the plant gave him first aid. I was afraid to mention it, though, until we got off these reports.

Dr. M—Bring him in. Now! To the devil with the reports if the man is bleeding to death.

Miss B—(turning pale) Yes,s-sir! But you know how Mr. McGillicuddy is. And his messenger boy will be here any minute now for the reports.

(She goes to the reception room. The men bearing a stretcher bring the injured patient through the office and go into the consultation room. Doctor and nurse follow. The office is quiet and empty for several minutes, then the phone rings.)

Miss B—(entering) Hello! Dr. McLean's office, Grove City sub-division United States Public Health Department. Nurse Bureaucracy, No. 44-47-2982 speaking.

Voice—Is that damn lazy Dr. McLean there?

Miss B—Yes sir—but he is operating.

Voice—Tell him to come to the phone. Operation or no operation I've gotta have report M-3464 right away. He's always late with those things.

Miss B—But the patient is about to bleed to death.

Voice—Well—let him bleed. I've gotta speak to McLean.

Nurse—Yessir. (She goes to door and calls Dr. McLean.)

Dr. McLean—(His voice is heard through door). Miss B., tell that insistent scoundrel that I will send the report when I get through this operation, and not before. I was trained when a doctor's first consideration was his patient and no stinking jobholder is going to make me change from that.

Miss B—(into phone)—Mr. McGillicuddy, Dr. McLean says the report is finished, and is ready for your messenger to pick it up. Goodbye. (She rushes back into the consultation room.)

(A brief time elapses. Dr. M. and Miss B. enter and sit at the desk.)

Miss B—(after searching through a pile of forms) Here's an order from Washington, which was approved and sent down from district headquarters this morning. It gives you permission to go out to the old mill to see that woman who had the pleurisy. That Mrs. Graves. Too bad she died before this order came.

Dr. M—I went to see her. But the Health Supervisor was so late in sending any information about the case that she was past the aid of medicines before I went. If her family had tried to get me first, instead of one of those supervisors, we might have saved her. I had her moved to a hospital the minute I saw her. But you see the application was put in while the supervisor was attending a conference. The application lay on her desk for three days before I got it. Then the bungle-boys down at the admission office kept her on the ambulance for four hours before they would admit her for treatment.

(Enter the Citizen family.)

John Citizen—Doctor, I want to get on your patient list.

Miss B—How many are there in your family?

John C—Three.

Miss B—(looks at registration list) We can admit two of you to our list now, and maybe we can get the other one on later.

John C—You mean you can take two of us? Why not all three?

Miss B—Well, you see, we are not allowed to have but 1975 adult persons on our list, and 525 children. Well, we've got 1974 adults on our lists now, and only 300 children. We can take either you or your wife and the child, but the doctor can't take both you and your wife.

(An ex-soldier, still in uniform, has come into the office during this conversation. An old friend of the doctor, he loudly exclaims.)

Soldier—Say, Doc! What the Hell is this. You mean we've been fighting for the last three years for this kind of thing? Can't have the doctors we want. Can't get our old jobs back if we don't join the union. Can't do this, nor that. We might as well have let the Germans and Japs take us over. All this government control sounds just like the stuff we've been fighting them for. I just came from the factory. They promised me my job back, all right. But, be-dammie if they didn't tell me I had to join a union. Some unions are all right, I guess. But that bird Lewis just about cooked me with 'em. He and the strikes coming just as we were beginning to whip hell out of the Nazis ... No unions for me, if that's the kind of stuff their Communist leaders are going to pull. And, now they say I can't have my old doctor back. You better put me on your waiting list ... but don't make me wait long, for I think I'll need some first class doctoring pretty soon. Looks like me and some of the boys who have been on the battle front have got another fight to win. Some of these dumb-bunnies running the political machine here are going to get the saw-dust knocked out of their heads. (Out of breath, he pauses. The doctor tries to get in a word. The nurse is near fainting because of this outburst against the government. Johnny starts in again)—Nope, Doc ... we didn't fight for this sort of thing—and we'll fight **against** it, now.

(Johnny rushes out with a wave for a good-bye.)

(The nurse slumps to the floor. The Citizens stare blankly. The doctor straightens out to his full height.)

Doctor M—And, I'll join that fight. Let me at McGillicuddy!

(He follows Johnny as the curtain falls.)

Reprints may be obtained from the *News-Journal*, Raeford, N. C., at 10c a copy, or 12 copies for 50c.

"Oint the Joints"

The following prescription, written December 19, 1822, by one of the pioneer physicians of Watauga County, was given to Miss Florence Dudley by Mrs. Colonel Story of Lenoir:

"This December the 19the, 1822 to Cure the Rheumatic pains take one quart Strong apple vinegar and one pound of hand tobacco boil them together and bind the leaves to the joints where the pains is with a woolen cloth then take one pound of hogs laird and a double handful of earth worms too spoon fulls of ginger one of black pepper—then simper them together over a slow fire till the worms becomes to a Cracklin then throw them out then oint the joints as hot as you can bear it and Rub it Down with a woolen cloth as hard as you can bear then bind a woolen Cloth to the place Night and morning and in four or five Days it will become Sound and well."

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OCTOBER, 1943

THE PROOF OF A PUDDING

The practice of medicine under government control began in Russia. The system was next adopted by Germany, then by a number of other European countries. Under Lloyd-George's administration the panel system was introduced in England.

On Thursday, September 16, Dr. Roscoe McMillan addressed the Raeford Kiwanis Club on the subject of the Wagner Bill. His address was followed by a general round-table discussion, after which the club voted unanimously to send a letter to each senator and representative from North Carolina, asking not only that he vote against the bill, but that he use his influence to have it killed.

During the discussion, the question was asked, "What are the advantages claimed for state medicine?" When someone gave as an advantage claimed prompter service on the part of the doctor, a member of the club who came from Russia a few years ago replied that under the system of state medicine in that country, it was usually a day and frequently two days before a call was answered. It was not unusual, he said, for the doctor to find the patient either dead or back at work when he finally arrived.

Another member of the club came to this country from England after he reached maturity. He told the club that his old family doctor said that the only satisfaction he derived from practicing under the panel system was the privilege of licking Lloyd-George's portrait on the stamps which he had to affix to his report every month.

In view of the extravagant claims made by the social reformers for their pet scheme, political medicine, these first-hand views are pertinent. "The proof of a pudding is in the eating."

* * * *

A STRAW IN THE WIND*

Having Uncle Sam pay all the bills for medical education appears to have certain definite disadvantages, as evidenced by the following news item from the News and Courier of August 17, 1943:

Medical College Navy Students Get Warning

Navy regulations against participation in political activities were invoked yesterday to forbid further protest by navy students of the Medical College of the State of South Carolina against the passage of the Wagner-Murray-Dingell socialized medicine bill now pending in congress.

A notice on the bulletin board in the lobby of the college read as follows: "All navy V-12 students by regulations are not allowed to participate in any form of political activity or join in any movement concerning government policy. Orders of Captain Needham, commanding officer."

Captain R. C. Needham, U.S.N., retired, is the commanding officer of the naval units at the Medical College and at the University of South Carolina.

It was understood last night that the students felt upset about the matter, although no comment for the press was forthcoming from them. At a meeting held Thursday night at the call of the class presidents, they had unanimously backed up the position of the Medical Society of South Carolina, a local organization, in protesting against passage of the bill, which they termed "totalitarian", and had made plans to enlist support of students of the sixty-odd accredited medical colleges in the nation to fight the bill.

Students who are in the army are not affected by the navy order, but it is expected that similar regulations will be enforced with regard to them.

Those physicians who look forward to being on the governmental payroll might well consider what it could mean in the curtailment of one's privileges of free speech.

*Editorial, *The Journal of the South Carolina Medical Association*, 39:235 (September) 1943.

THAT 1943 INCOME TAX

The Honorable Robert Doughton has been quoted as saying that a simplified income tax return form is needed and will probably be devised when the next tax bill is prepared. To the first part of this statement virtually all who sweated through the intricacies of the so-called simplified form for estimating one's 1943 tax will respond with a hearty amen! The numerous comments on the subject bear eloquent testimony to the desirability of having someone translate into intelligible English the meaning of the present form.

Even though the tremendous inroads made by the government upon one's earnings tend to lessen the incentive to honest toil, those of us who stay by the stuff at home realize that ours is a minor sacrifice compared with the contribution made by those in the armed forces. We are quite willing for the men in uniform to have everything needed to end the world conflict as soon as possible, and would not begrudge them the last penny that can be spared from necessary living expenses. Many of us would pay our income taxes with better grace, and would willingly toil through the verbal jungle of the "simplified" form if we knew that these taxes would be used for actual and necessary defense expenses. It does not increase the patriotic fervor with which we reach for our checkbooks, however, to read that Secretary Ickes—who boasts of being a bureaucrat — waved his bureaucratic wand and created a new Board on Geographical Names, with a director who is paid $8,000 a year, an assistant at $5,000, and 110 clerical helpers[1]. Twenty-five or thirty other helpers are being sought to complete this organization. According to its director, the Board is prepared to give streamlined service in the matter of pronunciation.

While the importance of pronunciation is recognized by all, Ickes' new brain-child could hardly be classed as essential to the war effort. It is reported that not one of five congressmen interviewed knew anything about the organization. Certainly it does not increase one's confidence in our so-called democratic government to know that our money can be spent recklessly at the whim of any bureaucrat.

1. Washington Wonderland, Reader's Digest 43:257:65 (Sept.) 1943.

DR. PARRAN ON THE WAGNER-MURRAY BILL

Since the Wagner-Murray-Dingell bill proposes to make the Surgeon General of the United States Public Health Service supreme dictator of medicine in the United States, it is important to know how Dr. Parran himself feels about the bill. The following letter, published in the September number of the *Journal of the Arkansas Medical Society*, speaks for itself:

July 19, 1943

Doctor R. B. Robins,
111 Van Buren Street,
Camden, Arkansas.

Dear Doctor Robins:

I am in receipt of your letter of July 10 requesting my comment on Senate bill 1161, and asking whether I favor it or not.

There are a number of considerations which would prevent me from accepting this bill as it stands at present. There is, for example, the question as to whether a compulsory health (or sickness) insurance scheme is the best method for improving the health of the people. I believe other plans should be explored and the advantages and disadvantages of the several methods freely discussed.

I feel also that everything possible should be done to elicit constructive suggestions from outstanding leaders in the medical profession, and that the physicians now serving in the armed forces should have an opportunity to express themselves regarding plans which would greatly affect their professional careers.

There are a number of other questions which I feel should receive most careful consideration before specific action is taken, but the above may be sufficient for any purpose you have in mind.

Sincerely yours,

Signed: THOMAS PARRAN,
Surgeon General,
U. S. Public Health Service.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

Bowman Gray School of Medicine of Wake Forest College

A 44 year old merchant was admitted to the private medical service of this hospital on March 30, 1943, complaining of intermittent nausea and vomiting, palpitation and pain in the chest. He had known that he had high blood pressure for the past ten years. During the year before admission his blood pressure had been found to be as high as 240 systolic, 140 diastolic. For several years he had had mild exertional dyspnea and some mild, vaguely described chest pain, which was relieved by rest and nitroglycerine. However, he had been able to carry on a gainful occupation until about six weeks before admission, when he awoke early in the morning with nausea and a severe "pressing feeling" in the substernal region. He vomited several times. The pain in his chest increased in severity and radiated down into both arms. The pain persisted and after two or three hours he was seen by his private physician, who noted a fall in blood pressure. The pain was finally relieved by an injection of morphine. The patient remained in bed for about two weeks, during which time he complained intermittently of nausea. The blood pressure remained low. After two weeks in bed he began to be up and about and attempted to return to work. However, he continued to have intermittent periods of nausea and vomiting without pain in the chest. At times he was quite dyspneic and orthopneic. Three weeks before admission he again woke at night with an attack of severe nausea and vomiting and again a sensation of pressure in the substernal region, without radiation. The pain lasted for a matter of hours. He was seen by his private physician and later admitted to a hospital, where he remained until he was brought here. At that hospital his blood pressure remained low. He had no more chest pain but continued to have intermittent periods of nausea and vomiting and a persistent tachycardia with frequent bouts of palpitation. He was given digitalis and aminophyllin without improvement.

Family History: One brother died of high blood pressure; another brother is living with high blood pressure.

Physical examination revealed a well developed and well nourished man who appeared to be acutely and chronically ill. He was dyspneic and moderately orthopneic. There was cyanosis of the lips and fingernail beds. There was marked narrowing of the retinal arterioles with arteriovenous nicking and "early bilateral papilledema." No hemorrhages or exudate were seen. The cervical veins were moderately distended. Dullness to percussion and absent tactile fremitus and breath sounds were noted at the left lung base, and moist crackling rales at both lung bases. A point of maximum impulse of the heart was neither seen nor felt, but there was a diffuse pulsation over the entire precordium. The left border of cardiac dullness was in the anterior axillary line in the fifth interspace, and supracardiac dullness extended 2 cm. to the right of the midsternal line. Heart sounds were loud and there was a presystolic gallop rhythm. No murmurs were heard. The blood pressure was 150 systolic, 134 diastolic. The abdomen was distended. There was shifting dullness in the flanks and palpable fluid wave. The liver was felt 2 cm. below the costal margin. There was no edema of the extremities.

Laboratory findings: A urinalysis showed the specific gravity to be 1.029. There was a 1 plus reaction for albumin, and no sugar. Occasional white blood cells and an occasional granular and hyalin cast were seen in the urinary sediment. Examination of the blood showed 5,900,000 red cells, with a hemoglobin of 17.5 Gm., and 7750 white cells, with 77 per cent polymorphonuclears, 6 per cent large lymphocytes, 15 per cent small lymphocytes, 2 per cent monocytes. The nonprotein nitrogen was 30 mg. per 100 cc. The blood sugar was 97 mg. per 100 cc. The total serum protein was 5.4 Gm. (albumin 3.5 Gm., globulin 1.9 Gm., albumin-globulin ratio 1.8). Cholesterol was 273 mg. per 100 cc. of blood. The Kahn test was not reported. The basal metabolic rate was plus 27.

Fluoroscopic examination of the chest showed marked cardiac enlargement without characteristic configuration. The amplitude of the cardiac pulsations was diminished. A gastro-intestinal series was negative. The electrocardiogram showed depression of ST_1 and ST_4, elevation of ST_2 and ST_3, diphasic T_1, inverted and cove shaped T_2 and T_3, upright T_4, and a deep Q_3. A second record showed little change. The arm to tongue cir-

culation time was 45 seconds. The vital capacity was 2250 cc.

Hospital Course: During the entire course in the hospital the patient had almost constant nausea and vomiting which did not respond to treatment. For intermittent periods he became mentally confused and irrational. After about a week in the hospital he began to have sacral edema; in about three days he had marked edema of the sacrum, back and lower extremities, but there was very little dyspnea. On his nineteenth hospital day an abdominal paracentesis was done and 100 cc. of thick yellow fluid with a specific gravity of 1.014 was obtained. About this time definite icterus of the sclerae was noted. He did not respond to diuretics. On the twenty-third hospital day he began to cough a considerable amount of bright red blood. At this time there were diminished breath sounds over the entire right lung, with many crackling moist rales but without change in the percussion note. No friction rub was heard. The following day there was dullness at the right lung base and the patient complained of pain in this region. An x-ray of the chest at this time showed consolidation of the right lower lung field. His condition thereafter grew steadily worse, and there was considerable dyspnea, mental confusion, progressive edema, and ascites. The nonprotein nitrogen rose to 54 mg. and the icteric index to 25. During the entire hospital course the blood pressure remained at a level of 145 systolic, 130 diastolic. The pulse pressure was always low. There was a paradoxical pulse of 6 mm. Terminally the blood pressure was recorded at 110 systolic, 95 diastolic. After about two weeks, a soft, blowing systolic murmur appeared at the apex. There was a persistent tachycardia throughout the entire hospital stay (pulse about 120). This was well out of proportion to the temperature, which was always normal except during the period when the patient spat up blood. He was given Lugol's solution without improvement.

On the twenty-eighth hospital day his skin became cold, clammy and cyanotic. Respirations were rapid and labored and many coarse, wet rales were heard over both lungs. The blood pressure could not be measured. A phlebotomy was attempted but was unsuccessful. He became comatose and died a few hours later.

Discussion

DR. TINSLEY R. HARRISON: The outstanding features in this case were progressive heart failure, intractable vomiting, and mild jaundice. Icterus in patients with cardiac disease is seen in the most severe form either when there is long standing and very marked congestion of the liver, such as occurs in organic disease of the tricuspid valve, or following pulmonary infarction. In this patient we have a story of blood spitting and physical signs compatible with infarction. I therefore think that we shall be safe in ascribing the jaundice to pulmonary infarction.

As regards the vomiting the problem is not so simple. This was the patient's most severe symptom, but neither clinical nor x-ray studies revealed any cause for this in the gastro-intestinal tract. We therefore have to ask ourselves whether the cardiac condition could be responsible for vomiting of this type. The most common cause of vomiting in patients with heart failure is the administration of drugs such as morphine, digitalis, xanthine diuretics, or ammonium chloride. We are told that the possibility of such a cause for the vomiting was excluded by the withdrawal of all medication for a considerable period without any relief from the vomiting. Heart failure itself frequently causes vomiting as the result of congestion of the abdominal viscera, and in such cases the vomiting usually responds rapidly to the standard treatment for congestive failure. Such was not the case in this patient. Another common cause of vomiting in patients with serious heart disease is uremia, as renal and cardiac failure so often occur simultaneously. However, there is no evidence of any significant degree of renal insufficiency in this patient. Occasionally one observes a patient with progressive severe myocardial disease who presents vomiting as an outstanding manifestation. The mechanism of such vomiting is probably comparable to that induced by digitalis: for it has been shown that vomiting induced by this drug is not, as was formerly thought, due to the action of the drug on one of the centers of the brain stem, but is a reflex from the heart. If the drug can induce reflex nausea and vomiting as a result of its action on the myocardium, there is no reason why a disease process acting on the myocardium may not have a similar effect. As a matter of fact, I

have seen several patients in the past with intractable vomiting which was proven at autopsy to be the result of progressive myocardial injury. Such a sequence of events is observed commonly in diphtheritic myocarditis and occasionally in rheumatic myocarditis. We are forced to conclude, I think, that in this patient the most likely explanation of the vomiting is extensive, severe and progressive disease in the myocardium.

When we try to determine the cause of the patient's cardiac disease, we run into a number of difficulties. On first thought this seems to be a rather obvious instance of coronary thrombosis because of the pre-existing marked hypertension and the sudden onset with pain in the chest. However, the progressive nature of the disorder is difficult to account for on the basis of one or two attacks of coronary thrombosis. Such patients do not ordinarily present for a period of many weeks progressive, intractable heart failure with very low pulse pressure and severe vomiting. The type of heart failure, as well as the vomiting, would point toward something in the heart which is progressive.

Certain features would go well with constrictive pericarditis, which commonly produces progressive heart failure and a very low pulse pressure. However, the pulse is usually paradoxical by a greater degree than in this patient. Furthermore, such patients do not ordinarily have marked cardiac enlargement and fairly loud sounds with readily visible pulsations. Typical findings in a person with constrictive pericarditis are a normal sized, quiet heart, plus severe right-sided failure.

Since there is no evidence of a valve lesion, and since we can probably exclude disease of the pericardium, we have to come back to the heart muscle. In many respects this patient presents the picture of severe myocarditis. However, evidences of syphilis, rheumatic fever, tuberculosis, trichinosis, sarcoidosis, and other specific causes of diffuse myocarditis are lacking. The picture is not unlike that seen with isolated or Fiedler's myocarditis, but this condition is unrelated to hypertension and would not account for the sudden onset of the symptoms with pain. Intractable and progressive heart failure may occasionally result from cardiac tumors, but we have in this patient no evidence of any primary malignant disease which could cause metastasis to the heart, and by x-ray no evidence of a marked deformity of the cardiac shadow usually seen with benign tumors which are large enough to cause heart failure.

We therefore come back to the paradox from which we started—namely, that the history suggests coronary occlusion, with possibly two attacks, while the course in the hospital suggests not an episodic disease such as coronary occlusion but a progressive disease. Is there any way in which these two opposing lines of evidence can be reconciled? There is, provided we are willing to make certain assumptions. This patient had long-standing hypertension, and it is therefore not unreasonable to believe that the small arteries in the heart may display considerable narrowing. As long as the blood pressure was high the myocardial nutrition was probably good in spite of such narrowed vessels. However, it is possible that when the decline in pressure set in as a result of the initial attack of coronary occlusion, the flow of blood through the narrow vessels became markedly impaired, and that as a result of this the patient developed diffuse myocardial ischemia with many scattered areas of degeneration. As the heart became still further injured, the blood pressure might drop more and this would lead to further myocardial ischemia and hence to further degeneration, the vicious cycle tending to perpetuate itself in this way. Such a series of events may seem a little far-fetched, but it is only by assuming this that I can account for the complete picture. I therefore believe that we are dealing with a patient who had originally obstruction of a large coronary vessel and who subsequently developed progressive ischemia in numerous scattered small foci in the heart as a result of impaired coronary circulation. One or more gross infarcts and very numerous small infarcts of varying age and in various stages should be found. In addition to these cardiac findings it seems probable that the patient had pulmonary infarction, and of course the usual chronic passive congestion found in people with long-standing heart failure.

Anatomical Discussion

DR. ROBERT P. MOREHEAD: The heart weighed 450 Gm., and in the anterior wall of the left ventricle, mid-way between the apex and the base, an area of infarction was

seen. This area of softening extended to involve the endocardium and was continuous with a mural thrombus which measured 3 cm. in diameter.

A thrombus was seen in the right coronary artery 2.5 cm. from the ostium. Microscopic study of the heart revealed marked arteriolosclerosis, with thrombosis and diffuse myocardial degeneration. As a rule the arterioles of the heart do not participate to any degree in generalized arteriolar disease. This case is unique in this respect.

Thrombi were demonstrated in many of the smaller branches of the pulmonary artery, and the entire lower lobe and lower portion of the middle lobe of the right lung were infarcted. An infarct 3 cm. in length was found in the lower lobe of the left lung. The jaundice is readily explained by this finding.

The gastro-intestinal tract showed nothing remarkable and vomiting must have been due to drugs or to venous congestion.

Anatomical Diagnosis

1. Cardiac hypertrophy.
2. Generalized coronary arteriosclerosis.
3. Thrombosis of the right coronary artery.
4. Myocardial infarct, left ventricle, anterior surface.
5. Mural thrombus, left ventricle.
6. Visceral congestion.
7. Edema, generalized, with hydrothorax, hydropericardium, hydroperitoneum.
8. Pulmonary thromboses, bilateral.
9. Pulmonary infarct, bilateral.
10. Ulcers in the esophagus, distal third.
11. Operative scar, well healed.

Physicians As Artists

"From time immemorial, medicine and art have been closely associated. The same skill that makes the surgeon's fingers deft with scalpel and ligature is at work in the beautiful examples of sculpture and carving shown in this book. The eye that so quickly and accurately evaluates the gradations in color and texture between normal and pathologic tissue coordinates the hand that wields the painter's brush. The man who chooses medicine as his life's work is largely motivated by a love for his fellow man, else he would select a vocation offering greater monetary reward. From the beginning, he is trained to exercise his powers of observations, and in time develops imagination, sympathy, understanding, philosophy and reverence, all of which are the very essence of art. Moreover, he deals with that most exquisite form of divine art and beauty, the human body."

—quoted from "Parergon," published by Mead Johnson & Company, Evansville, Ind. Free copy available to physicians on request.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.
Raleigh

***Contracts:* The mere request of a stranger to a physician to render needed service to another, to whom he owes no duty, is insufficient, in the absence of an express promise to pay, to render him liable for the value of the service the physician renders.**

This is an account of an action instituted by a physician and surgeon to recover of the defendant, a sheriff of one of our eastern counties, a fee for professional services rendered to, and hospital expenses incurred in behalf of a prisoner at the request of the sheriff, who had the prisoner in his custody. The prisoner was suffering from gunshot wounds inflicted by a deputy sheriff when he attempted to arrest him on a charge of robbery and larceny. At the time of the arrest the prisoner resisted, and had to be shot in order to repel the force which he used in resisting.

The defendant denied liabilitv, and alleged that the Board of County Commissioners was liable for the professional services and hospital expenses. Upon the defendant's motion, the County Commissioners were made a party defendant to the suit. The Board denied liability on the ground that it had not authorized the sheriff to take the wounded prisoner to the plaintiff for treatment, and the Board stated further that it had not requested any services from the doctor for the injured man.

In Superior Court there seemed to be no controversy except as to the liability for the expenses incident to professional services and hospitalization.

The sheriff readily admitted that he had requested treatment for the prisoner, and that this was done before he had an opportunity to secure authority from the Board of County Commissioners. In addition, there was some suggestion that the sheriff had personally promised to pay for the services rendered, but this fact was not definitely established.

At the close of all evidence, on motion of each defendant, there was a judgment of nonsuit, dismissing the action. From the judgment rendered in Superior Court the plaintiff appealed to the Supreme Court.

When this case came on to be considered by the Appellate Court, it was held specifically in this particular case that a sheriff of a county is not responsible for payment for the services of a physician whom he has requested to attend his prisoner, in the absence of a special promise to pay. The Court in substantiation of its ruling cited the following statement, which is of particular interest to physicians, and is found in the **Encyclopedia of Law**, volume 30, page 597. "The rule that where a person requests the performance of a service, and the request is complied with, and the service performed, there is an implied promise to pay for the service, does not apply where a person requests a physician to perform services for a patient, unless the relation of that person to the patient is such as raises a legal obligation on his part to call in a physician and pay for the services, or the circumstances are such as to show an intention on his part to pay for the services, it being so understood by him and the physician." But for the exception to the general rule, stated the Court, one might hesitate to call a physician to aid one in need of urgent medical service, fearing that he might be held responsible for the expenses incident thereto. This exception was not felt to be unjust to the physician, who may

require an express contract for payment of services before responding.

There is very little likelihood that a physician would refuse to give emergency treatment, regardless of the fee; but if the treatment is likely to necessitate a long period of hospitalization it would be essential for the physician to require a definite contract before assuming the responsibility. (Decision rendered Spring Term, 1926. North Carolina Supreme Court, Vol. 191, page 487.)

CORRESPONDENCE

The following letter from one of our most active practitioners is so characteristic of perhaps the majority of the members of the medical profession that it and the reply are both published in full.

Dr. Wingate Johnson
Winston-Salem, N. C.
Dear Doctor,

I notice that your name is listed on the board of Trustees of the National Physicians Committee and I am writing to you for some information in regard to it.

Is this Committee a worthy one and is it doing a good job?

Shall appreciate hearing from you.

* * * *

Dear Doctor—:

Naturally I would not have agreed to serve as a trustee of the National Physicians' Committee if I did not believe that it was a worthy organization, and that it was doing a good job. I am not egotistic enough to think that my name guarantees either its worthiness or its effectiveness, but I do hope that I can convince you of its merit.

As you doubtless know, there has been, over a period of at least ten years, a well planned effort on the part of the present administration to bring about federal control of the practice of medicine. Naturally part of this program has been an effort to discredit the private practitioners of medicine and the American Medical Association, which has approximately 80 per cent of the active practitioners of the country in its membership. The question has been asked over and over again, "Why doesn't the A.M.A. do something to counteract the propaganda against the medical profession? Why doesn't the A.M.A. fight back?"

The legal counsel of the American Medical Association advised strongly against its taking an active part in the fight—chiefly because such a course might render it liable to taxation as a corporation. Other considerations also entered into the decision.

The National Physicians' Committee was organized in November, 1939, in answer to this often repeated demand of private doctors that something be done. Its chairman, Dr. Edward H. Cary, is a past president of the American Medical Association. All trustees and members have been selected carefully for their known interest in preserving the American plan of medicine.

The fact that state medicine is not yet a reality, after more than ten years of relentless effort to force it upon the country, is evidence that the National Physicians' Committee is doing a good job. With the funds it has had—meager by contrast with the millions of tax money the government has used for propaganda—it has given the public an amazing amount of information about American medicine, to counteract the misinformation broadcast by the advocates of political medicine. The National Physicians' Committee's program has included, among other things, a broadside advertisement in the *Saturday Evening Post;* a number of radio programs; and a steady stream of suggested editorials for various newspapers, especially those having a wide rural and small town circulation. Perhaps you overlooked the letters sent you and every other active practitioner in America, before the 1942 congressional elections, asking your support in sounding out your candidates for Congress. It is hardly too much to say that as a result of that campaign, Congress now has a tremendous majority of members pledged to oppose further encroachments by the government upon medical practice.

Surely, however, you have not overlooked the booklet, "Abolishing Private Medical Practice", which was prepared by the National Physicians' Committee and sent to every active practitioner. As a result of that, nation-wide interest is being aroused in the Wagner-Murray Bill — S. 1161 —, and opposition to it increases in direct proportion to the spread of information about it.

The National Physicians' Committee was endorsed by unanimous vote of our State Society last May. A year ago it was approved by the House of Delegates of the American Medical Association. This should answer your question as to the worthiness of the Committee. More than these endorsements, however, the Committee needs the support of men like yourself. One of its hardest tasks has been to overcome the inertia of

the rank and file of the profession. This inertia is not caused, I am sure, by indifference to the future of American medicine. Rather it is due to the complete absorption of such men as you in the exacting demands of each day's work. With our ranks depleted by the war, those of us who are staying by the stuff at home need every possible moment to meet the demands upon our time. Since Pearl Harbor I have worked harder than at any time since the influenza epidemic of 1918-1919, and I know that virtually every other doctor in civilian practice can say the same thing. In our devotion to the demands of the present, however, let us not fail to keep faith with our colleagues in the armed forces. Let us see that they can return to practice medicine as individuals, rather than as hired servants of the State, and thus maintain the highest health standard in the world.

With very best wishes,

Sincerely yours,

WINGATE M. JOHNSON

BULLETIN BOARD

NEWS NOTES FROM THE STATE BOARD OF HEALTH

More than 4,100 expectant mothers who are the wives of service men have been provided with medical and hospital care up to September 3, by the North Carolina State Board of Health, it was announced by Dr. George M. Cooper, director of the board's maternal and child health services.

Approximately 150 babies of service men also have been treated in approved hospitals, according to Doctor Cooper. Only babies under a year old are eligible.

"North Carolina was the first state in the Union to have its plan for these services to the families of men under arms approved by the United States Children's Bureau, from which the funds are secured," Doctor Cooper said.

* * * *

Over the radio and through the press it has been announced recently that civilian America remained healthy during the first year of this country's participation as a belligerent in World War No. 2.

The figures released were highly gratifying, the national death rate for 1942 having been only 10.3 per thousand, while the birth rate was 20.7. This was the first time in decades, according to these news releases, that the **national birth** rate had doubled the **national death** rate. This despite the shortage of doctors and nurses and overcrowded housing conditions in our large industrial areas, to say nothing of the shortage of many essentials, including even some of our most important foodstuffs, hitherto considered vitally necessary to a balanced diet.

Now let us take a look at the health picture in our own state and see how it compares with the **national** picture. The comparison is extremely favorable, and the results highly gratifying.

While the **national** death rate in 1942 was 10.3, the North Carolina death rate was only 8.1, the lowest in our history, despite our recognized handicaps, while our birth rate was 24.6, or 3.9 **higher** than the **national** birth rate of 20.7. Throughout the **nation as a whole**, there were **twice** as many births as there were deaths last year, while the ratio in **North Carolina** was more than **three to one.** We had, during the year, 29,613 deaths, while the total number of births reported was 90,056.

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

County tuberculosis associations were organized during the month of August in Halifax, New Hanover and Richmond Counties. Mrs. R. C. Josey, Jr., Scotland Neck, was elected president in Halifax County, Mr. Emmett Bellamy, Wilmington attorney, was selected as the president in New Hanover and Mrs. John W. Porter from Rockingham became the first president of the new association in Richmond County.

* * * *

Dr. T. F. Vestal, Director of Industrial Hygiene of the North Carolina State Board of Health, gives the following pertinent facts in regard to case finding in industry in North Carolina.

"The North Carolina State Board of Health, with the assistance of the United States Public Health Service, the state and local tuberculosis organizations and the local health departments, has been able to carry on Tuberculosis Case-Finding programs in some of the industries in seven counties. These counties include, Durham, Pasquotank, Orange, Guilford, Forsyth, Mecklenburg, and Alamance. The industries examined were varied in both size and type. Some were small; some were large. The types include cotton textile, construction, hosiery knitting, munitions, shipbuilding, plane manufacture, and Coast Guard. The employees of one university were also examined. Both the white and colored races were well represented. Chest x-rays were made for 40,000 employees. Six hundred or one and one-half per cent showed evidence of pulmonary tuberculosis. About one-half of these appeared to be active from the x-ray standpoint. Of this 600 cases found, sixty per cent were minimal, thirty-five per cent were moderately advanced and five per cent were far advanced—some with cavitation."

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE

Dr. A. T. Miller, Jr., of the Department of Physiology, has recently been awarded grants by both the Sigma Xi Society and the American Medical Association to continue certain projects on a low pressure chamber.

* * * *

Dr. Wm. deB. MacNider attended a meeting of the Food and Nutrition Board of the National Research Council in Washington on August 31, and later, on September 2, a meeting of the Committee on the Nutritional Aspects of Ageing, in Chicago.

* * * *

Dr. John H. Ferguson, of the Department of Pharmacology of the School of Medicine, University of Michigan, has been appointed Professor and Head of the Department of Physiology of the University of North Carolina School of Medicine. Dr. Ferguson is well known for his research on the mechanism of blood clotting.

Dr. A. T. Miller, Jr., Assistant Professor of Physiology, has been appointed Assistant Dean of the School of Medicine of the University of North Carolina.

* * * *

The medical students of the University of North Carolina School of Medicine who will complete their first two years of Medicine in November, 1943, have been transferred to the following schools to complete their third and fourth years:

Edward Hatcher Alderman, Four Oaks, N. C. — Medical College of Virgina.
Joseph Woodrow Baggett, Lillington, N. C.—University of Maryland.
Claude Fletcher Bailey, Elizabeth City, N. C.—University of Maryland.
Hilda Hart Bailey, Woodleaf, N. C.—University of Pennsylvania.
Truett V. Bennett, Asheville, N. C.— Washington University .
Joseph Reece Blair, Troy, N. C.—Jefferson Medical College.
Robert Lee Bobbitt, Rocky Mount, N. C.— University of Pennsylvania.
William T. Brown, Hamlet, N. C.—Northwestern University.
George F. Cameron, Beaumont, Texas — Jefferson Medical College.
Douglas H. Clark, Clarkton, N. C.—University of Pennsylvania.
William C. Croom, Jacksonville, Florida—Washington University.
Robert G. Currin, Oxford, N. C.—University of South Carolina Medical College.
Joseph Vance Davis, Waynesville, N. C.—University of Pennsylvania.
Joseph P. Demeri, Brooklyn, New York—New York Medical College.
Samuel N. Dulin, Elizabeth City, N. C. — George Washington University.
Robert W. Elwell, Camden, New Jersey—Jefferson Medical College.
William L. Foster, Asheville, N. C.—University of Maryland.
Rose C. Harrelson, Tabor City, N. C. — Jefferson Medical College.
Lloyd B. Harrison, Washington, D. C.—University of Virginia.
Joseph Baylor Henninger, Chapel Hill, N. C.—Northwestern University.
George B. Johnston, Kelford, N. C.—Jefferson Medical College.
Ethel G. Lawner, Brooklyn, New York—New York Medical College.
Filas J. Little, Concord, N. C.—Medical College of South Carolina.
William H. Meroney, Greensboro, N. C.—New York University.
Harold H. Newman, Jr., Salisbury, N. C.—Johns Hopkins University.
Henry C. Newsome, Jr., Winston-Salem, N. C. — University of Virginia.
Sumner Malone Parham, Henderson, N. C.—University of Maryland.
Herbert W. Park, Jr., Greensboro, N. C.—Duke University.
Edwin B. Parkinson, Due West, S. C. — Jefferson Medical College.
Claude T. Peoples, Mocksville, N. C.—Jefferson Medical College.
Richard H. Phillips, Chapel Hill, N. C.—New York University.
Leon W. Robertson, Wake Forest, N. C.—Bowman Gray School of Medicine.
William A. Rodgers, Lakeland, Florida—University of Maryland.
William L. Ross, Salisbury, N. C.—Jefferson Medical College.
James H. Shell, Greenville, S. C.—University of Maryland.
Frank P. Smith, Easley, S. C.—Harvard.
Paul B. Toms, Salisbury, N. C.—University of Maryland.
James Taylor Vernon, Morganton, N. C.—Washington University.
William D. Watkins, Morganton, N. C.—Washington University.
Homer C. Wick, Washington, D. C.—Johns Hopkins University.
Cecil W. Wooten, Kinston, N. C.—Harvard.

Forsyth County Medical Society

The Forsyth County Medical Society held a dinner meeting in Winston-Salem on September 14. Dr. C. C. Coleman, of Richmond, was guest speaker. His subject was "Low Back Pain and Sciatica".

Mecklenburg County Medical Society

At the regular meeting of the Mecklenburg County Medical Society on September 7, 1943, the following resolution was unanimously adopted:

"Resolved: That the Mecklenburg County Medical Society in regular meeting assembled

"(A) Request that the President of the North Carolina Medical Society together with two of its members, preferably the President Elect and Secretary, ask the senior Senator of North Carolina to arrange a meeting of the members of Congress from North Carolina, such meeting to be held in Washington, D. C., to discuss the Wagner-Murray Bill (Bill S. 1161).

"(B) That expense money, not to exceed $150, be provided for this mission in a manner which seems wisest to the officers of the Mecklenburg County Medical Society."

Letters regarding the Wagner-Murray Bill were sent to Senators Bailey and Reynolds by the Cabinet of the Society.

Regional Meeting of College of Physicians

The program for the meeting of the North Carolina College of Physicians, which is to be held in Winston-Salem on Friday, October 29, is as follows:

Afternoon Session—Bowman Gray School of Medicine—2 P.M.

The Typhus Fever Problem in North Carolina—T. W. Baker, M.D. and James M. Alexander, M.D., Charlotte
Coronary Occlusion—William B. Dewar, M.D., Raleigh
Changing Phases in the Treatment of Tuberculosis —Paul H. Ringer, M.D., Asheville
Clinico-Pathological Conference—Arthur Grollman, M.D. and Robert P. Morehead, M.D., Bowman Gray School of Medicine

Evening Session—Robert E. Lee Hotel Dinner—7 P. M.

"As They Were"—Colored Pictures of Australia and the East in 1938—W. B. Castle, M.D., Boston, Guest Speaker
Remarks by Charles H. Cocke, M.D., Asheville, First Vice President of the American College of Physicians, and Paul F. Whitaker, M.D., Governor for North Carolina

South Carolina Refresher Course

The program for the refresher course to be given by the Medical College of the State of South Carolina, Charleston, has been completed, and is as follows:

ALUMNI ASSOCIATION REFRESHER COURSE

Wednesday, November 3, 1943

Baruch Memorial Auditorium

9:30 A.M.—The Uses and Abuses of the Sulfonamides—Dr. H. L. Flippin. Philadelphia, Pa.
10:15 A.M.—Differential Diagnosis of the Anginal Syndrome—Dr. C. C. Wolfert, Philadelphia, Pa.
11:00 A.M.—The Essentials of Pneumoconiosis—Dr. L. U. Gardner, Saranac, N. Y.
11:45 A.M.—Traumatic Shock—Dr. Alfred Blalock, Baltimore, Md.
12:30 to 1:15 P.M.—Clinical Presentations—By visiting speakers and faculty.
1:30 P.M.—Buffet Luncheon in Medical College Library
3:00 to 4:00 P. M.—Medical Round Table
The Sulfonamides—Dr. Flippin
Treatment of Heart Diseases—Dr. Wolfert
Pulmonary Diseases—Dr. Gardner
—Baruch Auditorium
4:00 to 5:00 P.M.—Surgical Round Table—Dr. Blalock—Baruch Auditorium
5:00 to 6:00 P.M.—Pathological Conference—Dr. K. M. Lynch—Pathology Laboratory

Thursday, November 4, 1943

9:30 A.M.—Deficiency Diseases—Dr. V. P. Sydenstricker, Augusta, Ga.
10:15 A.M. — Physiological Considerations in the Treatment of Nephritis—Dr. G. W. Thorn, Boston, Mass.
11:00 A.M.—Calcific Aortic Stenosis—Dr. J. T. King, Washington, D. C.
11:45 A.M.—Diagnosis and Treatment of the Hemorrhagic Diseases—Dr. R. R. Kracke, Atlanta, Ga.
12:30 to 1:15 P.M.—Clinical Presentations—By visiting speakers and faculty.
3:00 to 4:00 P. M.—Round Table—Thyroid Disturbances or other medical subjects—Drs. Thorn and King—Baruch Auditorium
4:00 to 5:00 P.M.—Nutritional Diseases, Hemorrhagic Diseases—Drs. Sydenstricker and Kracke —Baruch Auditorium
5:00 to 6:00 P.M.—Pathological Conference—Dr. K. M. Lynch—Pathology Laboratory
8:00 P.M.—Founder's Day Banquet—Speaker—Dr. Henry Meleney, New York
Subject—Tropical Medicine, Present and Future —Francis Marion Hotel

Hotel accommodations are scare, but every one who desires to attend the course will be housed. Requests for accommodations should be sent as soon as possible to Dr. W. H. Kelley or Dr. J. I. Waring, Charleston.

Association of Military Surgeons

Rear Admiral Ross T. McIntire, Surgeon General of the United States Navy, and personal physician to President Roosevelt, will serve as honorary chairman for the 51st annual convention of the Association of Military Surgeons of the United States to be held in Philadelphia October 21, 22 and 23.

A symposium on war medicine, which will chart the progress and the recent advances made in the care and hospitalization of men in the armed forces will highlight the three-day meeting in the Bellevue Stratford Hotel here.

Officials of the convention expect an attendance of more than 2000 doctors now attached to the fighting forces, many of whom will return from the battle fronts and from every section of the country where men are stationed, to hear the lectures and to take part in the panels and discussions that will mark the conference.

The Part of the Medical Profession in the War Manpower Commission Stabilization Plan

Since the advent of the War Manpower Commission Stabilization Plan on May 15, 1943, in Region IV, which includes North Carolina, Virginia, West Virginia, Maryland, and the District of Columbia, there has developed a definite need for a clear understanding of the plan on the part of medical practitioners.

Obviously there will be, and already have been, a number of cases in which employees who wish to change their employment resort to securing statements from a doctor in support of their request for a Statement of Availability from the United States Employment Service.

Occasionally there is a case in which, for medical reasons, the worker definitely needs to make a change; and in cases of this nature we not only welcome the statements of physicians, but urge the doctor who is making the statement to be as specific as possible with regard to the employee's physical condition and just what effect the work he is engaged in is having upon his or her health.

There have been received in various local Employment Offices statements signed by doctors reading, for example, as follows: "John Jones appeared before me today and stated that the work he is doing at present is injurious to his health and he is desirous of changing his employment on account of that." Or: "Bill Smith states that night work does not agree with him, that it tends to tear up his nervous system, and that he cannot sleep in the day time."

Such statements as these are not worth the paper upon which they are written so far as the War Manpower Commission is concerned, and do not reflect the condition existing in the person at all.

Where there actually exists a condition that is detrimental to an employee's health, the War Manpower Commission wishes to know about this; and if they are properly informed by the doctor's statement concerning the condition, then the Review Unit in the Local Offices can render a much more accurate decision than when they have a statement which carries very little meaning with it.

It is hoped that every member of the medical profession will read this article and follow the thought outlined. By assisting the War Manpower Commission in this way to stabilize employees you will be making a real contribution to the war effort.

The Stabilization Plan is not a freeze order, but a plan whereby an orderly flow of labor from employer to employer can be effected. The principal aim of the plan is to get every person who has a skill employed in work using that skill at its highest peak. If persons have more than one skill the purpose of the plan is to utilize the skill that will contribute most to the furtherance of the war effort and utilize it to the highest degree of efficiency.

The enormous turnover in labor can be controlled to a great extent by the cooperation of the medical profession, and it is hoped that this splendid group of men will lend their support toward reaching the desired goal.

Medical and Surgical Relief Committee of America

To help the Medical and Surgical Relief Committee continue its vital work of providing emergency medical kits to Coast Guard patrol boats, Navy sub-chasers, mine-sweepers and destroyer-escorts, Dr. Frederic M. Hanes, state chairman of the Committee, has issued an urgent appeal to surgeons, physicians and medical supply houses for drugs and spare discarded instruments.

Among the items needed to equip the emergency kits are artery clamps, splinter forceps, scalpels, probes, grooved directors, sulfadiazine tablets, sulfadiazine ointment 5%, sulfathiazole tablets, and sterile shaker envelopes of crystalline sulfanilamide. Other medicines and surgical instruments are, of course, equally welcome.

All salvaged instruments sent in to Committee Headquarters in New York are rigidly inspected, classified and reconditioned if necessary, before they are packed into the casualty units. No open boxes or bottles of medicine are acceptable.

The sub-chaser or patrol-boat kit, especially designed by Committee doctors for the small sub-hunting, doctor-less craft, is a compact case carrying essential medications and an instrument roll. According to Dr. Hanes, it is prepared to give immediate treatment to casualties until the ship reaches a base hospital. Dr. Hanes pointed out that detailed instructions are included in each medical unit to insure effective use of the contents by non-medical officers.

"Hundreds of appreciative letters in the Committee's files testify to the pressing need for such medical kits," declared Dr. Hanes. "They emphasize the urgency of the job the Committee is tackling—a job dedicated to shortening allied casualty lists. I hope every North Carolina doctor will contribute a salvaged instrument to the Medical and Surgical Relief Committee—the only war relief agency devoted solely to medical aid."

The Committee, celebrating its third birthday last month, was organized and is conducted by physicians and surgeons, to send medical and surgical supplies to the armed and civilian forces of America and her Allies. To date, over $562,000 of medicines, instruments, vitamins and other equipment have been donated by the Committee to military and maritime units of the United Nations, to needy hospitals, war-zone welfare agencies and civilian defense posts throughout the free world.

More Penicillin For Army

Work has begun on a 5-story and basement reinforced concrete and brick factory and laboratory building, 182'-6" x 82'-6", for the Lederle Laboratories, Inc. at Pearl River, N. Y., according to plans prepared by the Chemical Construction Company. The Chemical Construction Company and the Lederle Laboratories are wholly owned subsidiaries of the American Cyanamid Company, one of the largest chemical and allied industry manufacturing concerns in America.

The general contract has been placed with the Turner Construction Company. The job has high priorities from the War Production Board and extreme speed is required in order to meet the army's needs for penicillin, the remarkable new drug which the armed forces need in large quantities.

The Board of Trustees of the University of Illinois have announced the acceptance of a grant of $25,000 a year for three years made by The Upjohn Company of Kalamazoo, Michigan, to be devoted to the academic study of the structural composition and possible synthesis of penicillin.

AUXILIARY

PROGRAM SUGGESTIONS FOR COUNTY AUXILIARY PROGRAM CHAIRMEN

Again, as in the early fall of 1942, it is my privilege to present, with added notes to aid in adapting it to our own County Auxiliaries, the well-planned program of the Auxiliary to the American Medical Association, recently received from the National Program Chairman, Mrs. Oscar W. Friske. All parts in italics were added to aid in our own state's special projects.

Health Education and Post War Planning

Mrs. Friske says that our program is the most vital weapon of our Auxiliary. Through it our members will receive authentic information on the problems concerning and confronting our husbands' profession. Let us concentrate our efforts on the study of these serious conditions—not as individuals, but as a group of twenty-eight thousand women who *are* The Woman's Auxiliary to the American Medical Association. Let us be sure that all materials used for study groups be authentic and that we cooperate closely with the program of the War Participation Committee, whose Chairman is Mrs. Rollo K. Packard, 6901 Paxton Avenue, Chicago, Illinois.

I. Health Education.

1. American Medical Association: A. History and purpose. B. Departments (Bureau of Health Education, particularly). C. National Physicians Committee, why organized and for what purpose. D. State and County Medical Societies.

2. Woman's Auxiliary to the American Medical Association: A. History and objects (See "Forward Auxiliary", by Mrs. Harold Wahlquist, pages 118-122 of March *Bulletin* of the Auxiliary to the American Medical Association, also, "Be Informed"). B. *Hygeia:* Why its distribution is one of our chief activities (See December, 1942, *Bulletin*, page 72).

3. *Auxiliary to Southern Medical Society: A. Story of Jane Todd Crawford (See* Kentucky Medical Journal, *Part II—1942 Quarterly). B. Doctors' Day (See* North Carolina Medical Journal, *March, 1943, pages 114, 115).*

4. *Auxiliary to the Medical Society of the*

*State of North Carolina: Objects and Projects.**

5. War Participation: All activities pertaining to service of Auxiliary members in war efforts are united under this committee. It has been suggested by the National Advisory Committee that one of our projects, this year, be assisting with the recruitment of nurses and the new Nurses Cadette Program.

We urge Auxiliary members to become familiar with: A. Committee on Procurement and Assignment. B. Effects of war on medical education. C. Social trends and new scientific discoveries pertaining to the practice of medicine. D. Moral and mental hygiene—juvenile delinquency.

II. Post-War Planning.

1. Organization of Study Clubs—Topics for discussion: *A.* United States public health within your state and county. *B.* Distribution of medical care in your state and county. *C.* What type of hospital service do your state and community offer? Should something be done to improve this service? *D.* Living conditions in the penal and charitable institutions in your state and community. What is their rehabilitation program? *E.* Social hygiene education. This should be particularly stressed in communities adjacent to military camps. *F.* Prenatal and postnatal care of mother and child. *G.* Rehabilitation of post-war veterans. *H.* Recommendations of the National Resources Planning Board: (1) Will these recommendations affect organized medicine? Follow closely the organization section of each issue of the *Journal of the American Medical Association* in order to know what effect these plans will have on the private practice of medicine. *I.* What effect will tropical diseases, such as malaria, which is likely to be seen with increasing frequency in the United States, have on the post-war period?

2. Facilities available to Auxiliaries for Health Education Program: *A.* Bureau of Health Education of the American Medical Association, Dr. W. W. Bauer, Director, 535 N. Dearborn Street, Chicago, Ill.: (1) Electrically transcribed radio health programs. (2) Health films. *B.* Speakers from your own state and county medical societies. *C.* Articles appearing in the *Journal of the American Medical Association* and journals of state medical societies *(to be found in Charlotte and other Medical Libraries). D.* Articles appearing in *Hygeia. E.* Biographies of pioneer doctors. *F.* Medical legislation—federal and state.

From this wealth of subjects and available material, it is hoped that each county auxiliary program chairman will plan nine program meetings to be held whenever advisable, at the time and place of medical society meetings to help conserve gas and tires.

Respectfully submitted,

Mrs. Joseph A. Elliott
State Program Chairman
2700 Sherwood Ave.,
Charlotte, N. C.

*Copy may be borrowed from State Program Chairman.

AUXILIARY MEMORANDUM

Hygeia—remember me? I am published by the American Medical Association, and I interpret scientific medical information to the lay public. I also help to support your bed fund for tubercular patients from your subscription. Do not overlook me this year or leave me out of your reading. I will not only keep you informed, but I will help your Auxiliary. Plan now to send in your subscription for me to Mrs. John C. Reece, 212 Cascade Ave., Winston-Salem, N. C.

BOOK REVIEWS

Geriatric Medicine Edited by Edward J. Stieglitz, M.S., M.D., F.A.C.P., Consultant in Gerontology, National Institute of Health; Visiting Physician, Medical Service, Baltimore City Hospitals; Attending Physician, Washington Home for Incurables, Washington, D. C. 887 pages, illustrated. Price, $10.00. Philadelphia: W. B. Saunders Company, 1943.

Within the past decade there has been a steady increase of interest in the problems of old age. Numerous books, both professional and popular, have been written on the subject. Most of these have been monographs. Stieglitz has done for the practice of geriatrics what Cecil did for the practice of medicine. In one large volume he has collected a series of articles dealing with some phase of "the diagnosis and management of disease in the aging and in the aged." Each article is written by an authority in his field. Together they constitute a veritable system of geriatrics.

While it is doubtful, for various reasons, that many men will actually limit their work to patients past sixty, it is of vast importance that family doctors and internists alike shall have a working knowledge of the recognition, treatment and—so far as possible—the prevention of the diseases prevalent among older patients. For the acquisition of such knowledge Stieglitz's volume can be recommended unreservedly.

Allergy. By Erich Urbach, M.D., Chief of Allergy Service, Jewish Hospital, Philadelphia; Associate in Dermatology, University of Pennsylvania School of Medicine; Member of Board of Regents, American College of Allergists; with the collaboration of Philip M. Gottlieb, M.D. 1100 pages, with 400 illustrations and 80 charts. Price, $12.00. New York: Grune & Stratton, Inc., 1943.

This is a most interesting book. Although long, it is full of facts that both the general medical man and the student of allergy should know. The author very frankly expresses his own opinion, but gives an excellent list of references covering the previous literature on the subject. This book is divided into three parts. Part one discusses the fundamentals and principles of diagnosis and treatment. Part two discusses etiological causes and methods for their detection. Part three, the biggest section of the book, is devoted to the symptomatology and treatments of allergic diseases. Dr. Urbach's book, in the reviewer's opinion, is of great value to the medical profession. The value becomes more apparent when one considers the author's reputation in the field of actual practice and research.

Medical Malpractice. By Louis J. Regan, M.D., LL.B., Member of State Bar of California. Price, $5.00. 256 pages. St. Louis: C. V. Mosby Company, 1943.

The author of this book is well qualified to write a treatise on medical malpractice, inasmuch as he is not only an attorney at law, but is a doctor of medicine as well. This naturally gives him an insight into the legal problems which are of vital interest to the medical profession. While this book is offered primarily to physicians and surgeons, and is of necessity quite elemental, it should also be of considerable use to the legal profession. The leading cases in the realm of medical jurisprudence from all the states in the Unoin are referred to. These are suitably indexed, and are easily accessible in the national, district, and state reports.

In this book pertinent facts regarding litigation to which doctors are apt to be subjected are brought out in a clear, cogent, and concise manner, a pithy abstract of cases relating to the matter is furnished, and the references are copious and well indexed. The author evidently took pains to offer a work in medical malpractice which is interesting and readily understood, and at the same time of immeasurable value to the physician. Especially is this true concerning the chapter on "Malpractice Prophylaxis."

It was not the intention of the author to supplant the services of an attorney when the need arises, but this volume should be helpful in preventing members of the medical profession from falling into legal pitfalls which can be easily avoided. The old axiom, "Ignorance of law excuses no one," is perhaps more pertinent for the medical profession than for any other group, inasmuch as a doctor must, in emergencies, make decisions which if not correct may result disastrously as far as legal responsibilities are concerned. Years ago Justice James Wilson, of the United States Supreme Court, stated: "The Science of Law should in some measure and some degree be the study of every free citizen and every free man. Every free citizen and every free man has duties to perform and rights to claim. Unless in some measure and some degree he knows those duties and those rights, he can never act a just and independent part." It is suggested, therefore, that this book be made a part of the library of every practicing physician so that he may be acquainted with his legal responsibilities and be able to cope with certain emergencies which are bound to arise from time to time.

Rehabilitation of the War Injured. Edited by William Brown Doherty, M.D. and Dagobert D. Runes, Ph.D. 683 pages. Price, $10.00. New York: Philosophical Library, Inc., 1943.

This volume is a compilation of articles, most of which have appeared elsewhere. Because of the large field to be covered, many of the articles are limited in length, and hence the tone of the volume stresses what can be done with patients, rather than how to do it. The articles on plastic surgery cover many of the very specialized techniques well. It is unfortunate that the illustrations are very poorly reproduced, as much would be gained by clear photographs. The few line drawings are well reproduced. Many of the authors are English, and cover in their discussions the experiences of the first two years of the war. All through the book stress is placed on treatment of the patient as a whole, with emphasis on physiotherapy and psychotherapy, individualized to fit the particular problem. Examples are quoted of rapid improvement when other factors than the surgical problems are taken care of. The article on burns discusses the immediate treatment in a superficial fashion, rather than the rehabilitation of burned patients. The article on immersion foot also stresses the acute problem, rather than the rehabilitation of the patient, but it is an excellent discussion. The social insurance aspects of the problem of rehabilitation are pointed out. The book should be most useful to the general medical officer, and to physicians who must see such cases in private practice after the war.

Synopsis of Tropical Medicine. By Sir Philip Manson-Bahr, C.M.G., D.S.O., M.D., F.R.C.P., Senior Physician to the Hospital for Tropical Diseases, Royal Albert Dock and Tilbury Hospitals; Consulting Physician in Tropical Diseases to the Dreadnought Seamen's Hospital, London; Director, Division of Clinical Tropical Medicine, London School of Hygiene and Tropical Medicine; Consulting Physician to the Colonial Office and Crown Agents for the Colonies; Consultant in Tropical Medicine to the Admiralty and to the Royal Air Force; Lumleian Lecturer, Royal College of Physicians, 1941. Price, $2.50. 224 pages with 5 plates. Baltimore: The Williams & Wilkins Company, 1943.

This little book was written as a guide to tropical medicine for the use of medical officers in the army. The author is one of the world's outstanding authorities in tropical medicine, and the present book reflects in every page his authoritativeness. It includes in a succinct but clear outline form all the diseases encountered in tropical climes, including the protozoal, metazoal, rickettsial, bacterial, virus, fungus, nutritional, and climatic diseases, as well as diseases due to animal and vegetable poisons. The book is remarkably complete and should furnish an adequate text for the medical student and the medical officer in the tropics. It should also be in the library of every general practitioner, for it must be remembered that a majority of the so-called "tropical diseases" are encountered in North Carolina. Recently a case—the first of its kind—of histoplasmosis was encountered in this state, and undoubtedly with demobilization of our armed forces many rare importations will appear. The text under review can be recommended without reservation.

Physiological Regulations. By E. F. Adolph, Ph.D. 502 pages. Price, $7.50. Lancaster, Pa.: Jacques Cattell Press, 1943.

The author defines physiological regulation as the self-management of organisms which results in constancy of function. He then presents much interesting, quantitative data indicating how nearly constant various functions are maintained in man and lower forms, how far various functions may be pushed off balance, and how rapidly and completely they return to the normal or usual level after the disturbance. The most interesting data deal with problems of water balance. The author is an authority on this subject, and the reader is impressed with the diversity of new and useful generalizations which derive from the use of very simple experimental equipment—a graduated cylinder, a clock, a pair of scales, and an educated mind. Indeed with this simpe, though rare, equipment, the author succeeds in founding a new science called "Quantitative Descriptive Physiology"—a physiology of facts which de-emphasizes fanciful interpretations.

The reviewer believes that this book will become a classic in physiology and that the author's scientific philosophy will appeal to the physician and the physiologist alike.

Wyeth, Incorporated

The formation of Wyeth, Incorporated, as one of the nation's largest ethical drug houses through the grouping of seven companies now operating in the pharmaceutical, biological and nutritional fields, was announced today by American Home Products Corporation, of which the new company will be a wholly-owned subsidiary.

The companies which will comprise Wyeth, Incorporated, include some of the oldest and most important units in the ethical drug industry. They are John Wyeth and Brother, Incorporated, of Philadelphia, 83-year-old manufacturer of pharmaceuticals; S.M.A. Corporation of Chicago, Illinois and Mason, Michigan, producers of products for infant nutrition; the Reichel Laboratories, Inc., of Kimberton and West Chester, Penna., one of the largest producers of blood plasma for the Armed Forces and manufacturer of biologicals, the Bartos system of allergenic protein diagnostics and a pioneer in the development of the new wonder drug, penicillin; Gilliland Laboratories, Inc., of Marietta, Pa., manufacturers of a comprehensive line of biologicals; Petrogalar Laboratories, Inc. of Chicago, makers of Petrogalar; General Biochemicals, Inc., of Chagrin Falls, Ohio, manufacturers of vitamins, and The Bovinine Company of Chicago, products for anemia.

Clinical Curare: Intocostrin

Since time immemorial South American Indians have smeared curare on the tips of blow-gun darts to paralyze game in hunting. The drug is prepared by native witch doctors as an infusion of the bark and stems of certain plants, particularly from a liana or vine, **Chondrodendron tomentosum.**

Having access to the largest quantity of useful curare ever gathered, the Research Laboratories of E. R. Squibb & Sons have developed methods for the preparation of a highly uniform, physiologically standardized, highly stable and sterile aqueous extract. This preparation is known as Intocostrin. Each cubic centimeter is adjusted by comparative tests on healthy rabbits to conform to the equivalent of 20 mg. per cc. of a standard drug, the important ingredient of which has been isolated in crystalline form and identified as d-tubocurarine.

Intocostrin, given intravenously or intramuscularly, exhibits the typical action of pure curare, that is, interruption of the nerve impulse at the neuromuscular junction with resulting paresis or relaxation of voluntary muscle. The drug acts within a minute or two after injection; the effect lasts about 15 to 30 minutes, disappearing rapidly as the drug is eliminated. Intocostrin has little effect on the circulation and none on the sensory nerves. It is inactive by mouth.

Intocostrin has been the subject of extensive laboratory and clinical investigation during the past three years. It has been described as indispensable in preventing traumatic complications which not infrequently accompany convulsive shock therapy of mental disease. Over 40,000 injections of Intocostrin have been given for this purpose, and its use extends the benefits of such therapy to patients who otherwise would be unable to obtain its benefits.

The preparation has been used in spastic children, its lissive action being prolonged by intramuscular injection and permitting physical therapy and muscle training, under favorable conditions. Prior to its availability no comparable treatment for these disorders was known.

In certain other resistant spastic disorders of the nervous system, the intravenous or intramuscular injection of Intocostrin may give sufficient relief from painful spasm so that the drug can be recommended for this purpose alone. Another interesting use of Intocostrin is as a diagnostic agent in the differential diagnosis of myasthenia gravis. A small fraction of the average adult dose produces profound exaggeration of symptoms in a myasthenic patient. The test is strongly positive even where the opposite prostigmine test is indefinite.

INDEX TO ADVERTISERS

Beallmont Park Sanatorium XXVI
Borden Company IX
Broadoaks Sanatorium XXIV
Charles C. Haskel and Company V
Charlotte Eye, Ear and Throat Hospital XXII
Cheplin Biological Laboratories, Inc. XIX
Ciba Pharmaceutical Products ..... VII—XIII—XVII
Cook County Graduate School of Medicine XXVI
Eli Lilly and Company XIV
Glenwood Park Sanatorium XXIII
Mead, Johnson & Company XXVIII
M & R Laboratories VIII
Parke, Davis and Company XVI
Petrolagar XXVII
Philip Morris & Co., Ltd., Inc. XXV
Pinebluff Sanitarium III
Physicians Casualty Assn.
Physicians Health Assn. XXI
Powers and Anderson, Inc. XXVI
R. J. Reynolds Tobacco Co. XI
S. M. A. Corp. VI
Smith, Kline & French XVIII
Southern Medical Assn. XX
Spencer Corset Company, Inc. XX
E. R. Squibb & Co. XV
Stuart Circle Hospital XXIV
Thompson Homestead School XXVI
Tucker Hospital XXIII
Wachtel's, Inc. XXI
Walker Vitamins XXI
Westbrook Sanatorium XXII
Winchester Surgical Supply Co.
Winchester-Ritch Surgical Co. III
Winthrop Chemical Co., Inc. XII
Wyeth, John & Bro. II